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General Practitioner and Advanced Student.

BY

JOHN THORBURN, M.D., F.R.C.P.,


PROFESSOR OF OBSTETRIC MEDICINE, THE OWENS COLLEGE AND VICTORIA UNIVERSITY, MANCHESTER.
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TO
HIS COLLEAGUES
AND TO
THE STUDENTS
PAST AND PRESENT
OF
The Owens College School of Medicine
AMONG WHOM HE HAS PASSED MANY OF THE
HAPPIEST DAYS OF HIS LIFE
THIS WORK
IS CORDIALLY INSCRIBED
BY
The Author.

PREFACE.

THE following work, undertaken at the request of my Publishers, has been written with a very definite purpose.

It is intended to afford the general practitioner of medicine, or the advanced student, a view of the present state of gynaecological knowledge and practice.

Avoiding all personal "hobbies," and, as far as possible, all controversial matters, and using such judicially selective skill as I could, without dogmatism, bring to bear upon the discussion of each topic,—I have endeavoured to go over the whole ground in such a manner as should be most practically useful in those emergencies which are daily occurring to every general practitioner.

I trust that a few years spent in such practice, and followed by nearly twenty of class-room and clinical teaching, have in some degree fitted me for the task.

If I have, on the whole, given such sound, practical, and fairly judicial advice as will enable a few of the rising generation of practitioners to escape the errors and avoid the difficulties of my own early career, I shall be more than compensated for any labour involved in the task.

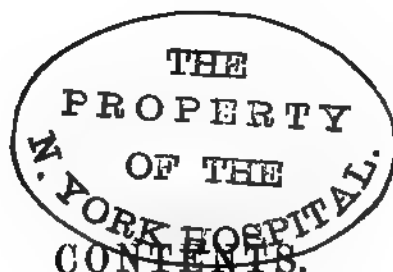
My sincere thanks are due to Mr A. H. Young, F.R.C.S., whose facile pencil has supplied the original illustrations; to Mr Alban Doran, for some excellent original woodcuts from his work on ovarian tumours; to Dr William Yeats and Dr Arthur Robinson, for much valuable assistance in preparing the manuscript; and to my son, Mr William Thorburn, M.B., B.S., for assisting me

in passing the work through the press, and in various other ways.

I have also to thank Messrs Maw, Son, & Thompson, and Messrs Krohne & Sesemann of London, and Messrs Tiemann and Co. of New York, for the courtesy with which they placed their catalogues of instruments at my disposal.

J. THORBURN.

MANCHESTER, *May 1*, 1885.



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A MANUAL OF GYNÆCOLOGY.

CHAPTER I.

THE METHODS AND MEANS COMMONLY EMPLOYED IN DIAGNOSIS. MANUAL EXAMINATION, including Abdominal Palpation, Digital Examination or Vaginal *toucher* Bi-manual Examination, Rectal and Vesical Examination, &c. INSTRUMENTAL EXAMINATION, including the use of Specula, Sounds, and Tents. INSPECTION OF MORBID DISCHARGES.

A GREAT amount of ingenuity has at various times been displayed in the invention of more or less complicated gynæcological tables or couches. Some of these are intended to facilitate the performance of operations of great difficulty and importance; others, I fear, to assist in throwing the patient, at ordinary examinations, into positions which she cannot, without such aid, assume or maintain. Dr Chadwick's Examining-table (fig. 1) is one of the best known of these, and is intended by the designer to serve "as a substitute for the unsightly, often ill-adapted, and expensive chairs which have been used by gynæcologists for examinations."

Much of the ordinary work of gynæcological practice must, however, be done at the homes of the patients, and not, as with the specialist, in consulting-rooms, or "offices," or in the well furnished ward or operating theatre; but every consulting-room or surgery should be furnished with a good high couch, say thirty inches in height at the very least. This should have no back nor foot-board, and one end of it should slope gently upwards to the extent of about a foot, and the whole surface should be firmly upholstered. A movable square cushion, and a large thin coverlet to throw over the patient, should also be at hand. The couch should be placed nearly opposite to a good window light, or should be easily movable.

In this climate it is always necessary to be provided with a reflecting

Lamp. Many such have been invented, one of the simplest of which is



FIG. 1. Dr Chadwick's Table for Gynaecological Examinations and Operations.

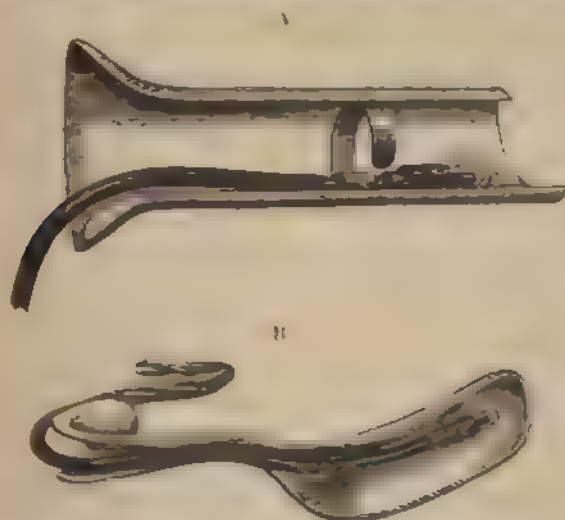
shown by fig. 2. The desiderata of such a lamp are—a good concave



FIG. 2. -Coburn's Lamp, slightly modified.

A reflecting lamp may be extemporised by tying a large silver spoon to a candle in an ordinary flat candlestick. The insertion of a couple of small plugs of cork between the handle of the spoon and the candle is an improvement, but not a necessity, when the reflector is only wanted for a short emergency. I have endeavoured to procure a good lamp electric or other wise, which could be affixed to the forehead, but I find that all these, and also the forehead mirrors used for the laryngoscope, are very inconvenient in gynaecology. I am much indebted, however, to the following suggestions of Mr Broughton, dentist, of Manchester—A small hollow pencil, 3 inches long by $\frac{1}{4}$ inch in diameter, is fitted at one extremity with a Swan meander-cent lamp, of rather less than its own circumference, and connected with a bichromate battery, which stands below the usual couch. For the dentist's

purposes this is invaluable. It perfectly lights up the mouth and fauces, and unless the miniature lamp comes into actual contact with the soft parts, it gives no sensation of heat. By a spring clip, which takes up no room (fig. 3, A), the illuminating pencil can be retained at any part of the internal wall of a tubular speculum, giving perfect illumination, and allowing of the use of both hands. The pencil can also be placed in the hollow of the duck-bill speculum, and fixed there by a button and slit (fig. 4, B), and the firm but flexible connecting wires being bent parallel with the shank, it is easily held *in situ* by the same hand which holds the speculum. A



FIGS. 3 and 4. Application of the Electric Light to A, the Tubular, B, the Duck-bill Speculum.

portable accumulator of electricity, which will give light for an hour, can easily be carried in an outside pocket for home practice. Mr. Broughton has also provided a more complex mechanism for keeping the lamp cool by water irrigation during long operations.

In most cases some female friend accompanies the patient, or is to be found at her home. She is of little use as an assistant, except occasionally as a lamp holder; but a female attendant, with more or less training, at his consulting rooms, is invaluable to one who has much practice in the diseases of women.

Manual Examination.

Under no circumstances should the use of instrumental means of diagnosis ever precede a careful manual examination. The preliminary information which is obtained in this way is absolutely essential to the safe use of instruments, and the only guide as to their necessity; and, moreover, for diagnostic purposes, if a choice had to be made, the hand is infinitely superior to any instrument, or probably to all of them combined. As a general rule, it is advisable to commence with

Abdominal Palpation. If the patient is in bed, she is probably lying on her back, the most suitable position, and the hand is passed at first lightly over the abdominal surface in search of swelling, tumour, or painful localities. While the patient is engaged in conversation, the fingers are then pressed more firmly downwards within the brim of the pelvis. The existence and exact locality of any abnormal fulness or tenderness is thus made out. Should any prominent swelling be found, it is now carefully investigated by percussion, auscultation, and otherwise; or, if the patient is in the consulting-room, it is decided whether there is a necessity for removing the corset, and otherwise providing for a complete abdominal investigation. I prefer always to commence a more complete examination in this way by abdominal palpation, having found that, with nervous or timid patients, it breaks the ice, as it were, and leads up to an internal examination, which would otherwise be less freely accorded. No deference to the natural modesty and shrinking of women from such examinations should ever be neglected. Moreover, this simple palpation is sometimes sufficient in itself, and there may be no necessity for going further, as, for instance, in many cases of amenorrhoea in the unmarried; while the information, positive or negative, thus gained, is invaluable in enabling us to direct our future steps straight to the points of the case.

Unless the symptoms point manifestly to some affection of the external genitals, the next and most important step is the

Digital Examination by the Vagina, or "Toucher." Until recently, this was nearly always made, in this country, in the ordinary midwifery position, the patient being turned upon her left side, with her breech as near to, and her head as far from, the examiner as is conveniently possible, her hip and knee joints being well flexed. Of late years, however, the great superiority of the position on the back, with the knees moderately flexed, has been stoutly maintained by some writers, and the advocates of each plan have cast not a little unnecessary contumely on their opponents. The fact is, that a practitioner who has had the requisite experience can make out perfectly well, in either way, all that

is ordinarily required, and that in difficult or doubtful cases he will often feel compelled to use each position in succession. When the patient is on her back, she is more favourably placed for subsequent examination with both hands, while in the other position we are more ready for the use of instrumental means of examination. I am certain that, for various reasons, the lateral position is less repugnant to the majority of women.¹

The student should endeavour to acquire ambidexterity, and for this purpose should examine with the right or left hand impartially, but, contrary to the opinion of Dr Barnes and others, I am satisfied that the right hand is, for ordinary purposes, the most useful to the practitioner and the least uncomfortable to the patient. Nevertheless, I consider that when instruments, such as the sound, tent-holder, and the like, are to be introduced, the left hand furnishes the most satisfactory guide, while, with most men, the right wields the instrument with greater precision and tact. The forefinger alone should be used, until it has been ascertained that the case requires two or more, and that the parts are lax enough to permit of their introduction. Vaseline impregnated with carbolic acid (1 in 40), or thymol (gr. xv ad ℥i), forms a better lubricant than oils or fats, and free lubrication must never be neglected; it saves the patient from much discomfort, and diminishes the danger to the practitioner of specific infection. The finger is first placed upon the perineum, and then gently hooked round its anterior border into the vulva; it is next carried slowly along the posterior vaginal wall till it reaches the cervix uteri or the *cul-de-sac* behind it. The cervix and os uteri are then carefully examined, and afterwards the upper end of the vagina around them. While withdrawing the finger, the anterior vaginal wall is traced, and if any special pain has been noticed while passing the vulva, its site is now definitely ascertained. For these ends the front of the finger must be turned backwards, forwards, or laterally as required, and to any one who has a forefinger of sufficient length, and who has been accustomed to use it, it seems almost childish to discuss the question which hand is preferable from this point of view; there is no difficulty with either. Hands differ much in size and shape, and I find it therefore best to give no specific instructions as to the disposal of the other fingers, further than to keep them folded tightly out of the way as much as possible, and not to hurt the patient with them. The thumb is generally least in the way when firmly extended.

Let us now see what are the points ascertainable by a single sys-

Dr Paul Munde says— "The comfort of feeling that the patient is not watching one's every expression and movement has but to be experienced to be appreciated," and this applies with tenfold force to clinical work, where several students have to examine in succession.

tematic digital examination. In such a summary we must perforce refer to affections not yet described, and it will be found of great service to turn back to it at a later stage, or to refer to it when considering any special diagnosis.

1st. We note, externally, the state of the perineum, hymen, and ostium vaginae generally, and the pain due to vascular growths, vulvitis, and other affections mentioned in Chapter II. ; we also perceive whether any substance protrudes through the vulva or blocks the opening, such as a prolapsed uterus, a polypus, or a malignant growth.

2nd. We mark the condition of the vagina as regards heat, moisture, and tenderness, the existence of any bulging of its walls, or of any contractions of its passage, or of foreign bodies within it.

3rd. We ascertain the presence of any fecal accumulation in the rectum, or foreign body within the rectum or bladder.

4th. We can estimate the various diameters of the bony pelvis, and the existence of bony or other growths therefrom.

5th. We learn, what no instrument can tell us with certainty, the exact position and direction of the cervix uteri—its length, shape, and consistence—together with any fissures, indentations, or excrescences upon its surface.

6th. We ascertain the state of the external os uteri—its shape, whether round, oval, or irregular its patency to the finger, and the existence of any protruding substance, such as fungoid excrescences, hard or soft polypi, a projecting ovum, or an inverted uterus. A delicate sense of touch is required to ascertain the presence of small soft polypi, or of the granular and velvety state of the mucous membrane, so common in chronic inflammation of its surface.

7th. We may learn much about the uterus as a whole. If the os, as sometimes happens, is widely dilated, we may explore the whole cavity of the uterus. Or we may gain the important information whether it is fixed in its place, or movable when poised on the tip of the finger, or merely heavier than usual. In health, we cannot, with one hand, examine the body of the uterus, except to a slight extent in front ; but when enlarged by pregnancy or disease it can be traced through the vaginal roof, and we learn whether the expansion is uniform or in one direction only. But, when the womb is displaced, or bent upon its long axis, we can reach its body or even its fundus, and, comparing this with the direction of its cervix, make a near approach to diagnosis of the exact affection.

8th. We ascertain, moreover, not least in importance, what is the state of matters surrounding the uterus and vagina, what there is abnormal before, behind, laterally, or extending upwards towards the brim of the pelvis. In fact, so many grave and important deviations from

health are ascertained under this head that it seems advisable to sub-classify them.

Behind the vagina we may find certain abnormalities.

(a) The rectum may be loaded with fecal accumulation, sometimes enormous in quantity, sometimes there are only one or two hard nodules, which may be mistaken for malignant growths, inflammatory exudations, or a diseased and prolapsed ovary. On steady pressure through the vaginal wall, fecal masses put and are displaceable, and if their nature is still doubtful, an examination by the rectum will make it clear. The rectum may also be occupied by a polypus, a mass of hæmorrhoids, a malignant growth, or a foreign body, differentiation being effected by direct exploration of its cavity.

In the pouch of peritoneum which dips downwards behind the uterus and upper end of the vagina, and in front of the rectum, most of the other post vaginal abnormal substances are found. This very important Douglas's pouch is shown at fig. 5, and is capable of great distension downwards. We have here occasionally

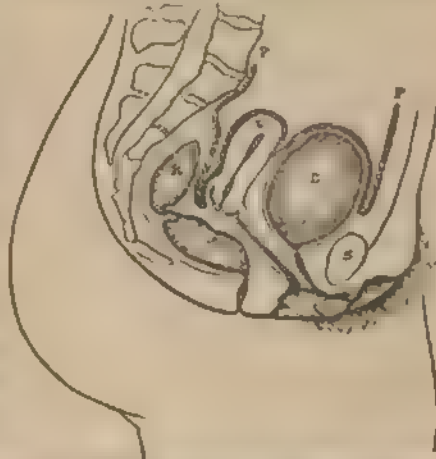


FIG. 5. Diagrammatic view of Douglas's Peritoneal Pouch (after Ranney). P. P. Peritoneum; R. Rectum; U. Uterus; B. Distended Bladder; S. Synphysis pubis.

(b) A knuckle or semi-hemal protrusion of the bowel. The obstetrician remembers this as a possible obstruction to the passage of the head, though it is an infrequent one. Its comparative painlessness, its repressibility upwards in ordinary circumstances, and its pitting on

pressure like a fecal mass, though found to be anterior to and not within the rectum, are its chief diagnostic features, though it must be admitted that it is not always easy of diagnosis except by the exclusion of other conditions.

(c) The body of the uterus, gravid or non-gravid, when thrown backwards retroversion or retroflexion is perhaps the most frequent abnormal substance met with in Douglas's pouch, and is found as a firm but elastic, smooth, and generally movable body.

(d) With great frequency also we have the products of inflammation of the peritoneum itself—firm, solid, fixed exudation of coagulated lymph, which has exuded in this site, or has trickled down in its first

fluid state as all fluids will, to the lowest possible level, and which may, though fortunately not often, return to the fluid state as abscess.

(e) Very similar in its physical characters is the exudation due to the escape of blood into the peritoneal cavity (hæmatocoele). This also tends to gravitate into this low lying pouch, undergoes there a similar hardening process, and ends similarly in absorption or puriform softening. Similar exudations of lymph or of blood occur in the pelvic cellular tissue, but for obvious reasons they have not the special tendency to accumulate chiefly behind the vagina. They may, however, be found in part, or, though very rarely, wholly in this site. See Perimetritis, Parametritis, and Hæmatocoele (Chap. XIX.).

(f) Cancerous or tubercular deposits are found in this site, though more rarely, especially as a primary affection. They are, or at least the former is, usually accompanied by ascites, and is often found only in searching for the cause of the dropsy.

(g) Firm, hard, and often nodulated outgrowths from the uterus, of non-malignant character (fibro-myomata), are not infrequently encountered in this site, and we may thus reach either large tumours, which are perceptible above the pelvic brim, or small ones, which tend by their weight to drag back the uterus towards the sacral hollow, or by their presence to push it forwards or to one side.

(h) Small tumours of the ovary tend also to descend here, more or less laterally, though the common cystic tumours do not generally attract attention until so large that they rise above the pelvic brim, and may be quite out of reach *per vaginam*. The ovary itself, healthy or somewhat diseased, usually the latter, may be found here, much lower than in its normal site, giving rise by its prolapse to troublesome symptoms, and the distended Fallopian tubes are also met with more frequently than was, until recently, supposed to be the case.

(i) The fluid of ascites, if sufficient to render the abdomen tense, may, through Douglas's pouch, press forward the upper part of the vagina, but this bulging recedes on pressure with the finger. The experienced touch recognises, however, the receding pouch, as it also does that which is caused by quite recent effusion of fluid lymph or blood.

(k) Lastly, that fatal though happily rare error of nature, an extra-uterine foetation, occupies, in some instances, this site, being almost always lateral as well as posterior.

In front of the vagina we may find—

(a) The body or fundus of the uterus, when it is abnormally bent forwards (anteversion or ante flexion). To a slight extent we may trace the body here in perfect health, and still more so in early pregnancy.

(b) Intra-peritoneal exudations, similar to those discovered behind,

though very rarely extending so low down, owing to the non-existence of so deep a peritoneal pouch. Exudations into the cellular tissue are, however, not uncommon in this situation.

(c) Uterine fibroid or fibro-myomatous outgrowths, less commonly than behind.

(d) The ovary is stated to have been found displaced in this direction, and, as it may undoubtedly protrude through the inguinal canal, the possibility of its appearing in such a situation cannot be denied. I have never met with it here, however.

(e) General enlargement of the lower segment of the uterus.

(f) Calculus, fungoid growths, &c., of the bladder, or the distended organ itself.

Laterally we may find

(a) Exudation of coagulated lymph or blood, continuous with that behind or in front, or confined to the lateral situation, on one or both sides. When this is unilateral, the uterus is more or less pushed to the opposite side. See Parametritis.

(b) The body of the uterus, either pushed laterally by exudation, or pulled by cicatrization, or, very rarely, bent laterally without any apparent cause of inflammatory origin.

(c) The ovary, if enlarged or hardened, and yet remaining about its natural situation, may be reached almost at the level of the pelvic brim; but unless tender, or enlarged, or unduly depressed, a mere digital examination will not easily ascertain its whereabouts.

(d) We may also discover here the presence of perityphlitic, nephritic, or perinephritic abscess, or of abscess due to disease of the hip or sacro-iliac joints or of other organs.

Bi-manual Examination. The difficulty of reaching the upper level of the pelvic cavity by a digital examination, or of fixing the structures there so as to allow of their careful investigation, suggests the necessity for exerting counter pressure by the other hand; this again suggests the simultaneous use of both hands as investigators, and this constitutes bi-manual examination. By this method, while exploring the pelvic cavity with one hand (say the right) from below, we not only bring within its reach the organs contained, but the fingers of the other hand can be slowly and gently pressed downwards from above the brim, so that, in women who are not very stout, they will meet those which are in the vagina, unless any normal structure or abnormal product intervene. In this way a clear map of the parts at the brim of the pelvis can be obtained, and the position and condition of the uterus, ovaries, Fallopian tubes, or of any abnormal exudations or growths, can be made out with a very near approach to absolute certainty. It is therefore imperative that, in every examination for diagnostic purposes, the bi-manual

method should to some extent be used. In difficult cases, and with the aid of anaesthesia, we thus have it in our power to realise the physical condition of these pelvic viscera more completely than we can that of any others in the body. In a thin woman it is quite possible to make a fairly accurate bi-manual examination while she retains the left lateral position, the left hand pressing upon the abdomen: but if the patient be stout, or the diagnosis difficult, while retaining the intra vaginal finger in place, she can easily be turned upon her back, whereby a more complete control of the abdominal wall is obtained. This external pressure must be slow and persistent, not losing any ground once gained. To relax the muscles, the patient should be made to converse, the fingers sinking a little deeper at each relaxation of the abdominal wall, and the thighs must be completely flexed, though occasionally nothing but anaesthetics will suffice to allow of the necessary relaxation of all parts.



FIG. 6. Bi-manual Examination (Schroeder).

The combined examination (fig. 6) must be methodical, the uterus being examined with the internal finger, placed first in front of the cervix, then behind it, and then on the os externum, while the other hand clearly defines its position from above in each instance. The condition of the ovaries and other lateral structures is similarly ascertained at various angles, and the con-

tour of exudations and growths is clearly defined. This bi-manual examination is inadvisable, except with very great care, during the presence of acute inflammatory disease: on the other hand, it obviates the necessity for the use of the uterine sound in cases where pregnancy cannot be positively excluded, or when there are other objections to the use of that instrument. I would insist that the value and necessity of bi-manual examination cannot easily be over-estimated, for in favourable cases we may thus gain almost as clear a picture of the position, size, and shape of the organs at the pelvic brim as by a *post-mortem* inspection. However useful the lithotomy position may be in certain cases of operative interference, it is seldom necessary to subject the patient to it for the purpose of a mere bi-manual examination, and only in very exceptional cases is the introduction of the whole hand into the vagina required, as in the case, for instance, of tumours which cannot otherwise be fully explored.

Digital examination in the erect position, or with the patient upon her knees and elbows, or knees and chest, is so seldom had recourse to for mere diagnosis, that it need only be referred to when discussing those special instances in which it is required. But undoubtedly the various degrees of prolapse may sometimes be made out most clearly in the erect position, when the end warrants the means.

Examination per Rectum Rectal "Toucher." In many cases, much light may be thrown upon diagnosis by an examination of the pelvis with the left forefinger passed into the rectum. The posterior surface of the uterus and the contents of Douglas's pouch, as well as the ligaments surrounding it, can be thus more minutely examined, especially if the abdomen is well compressed by the other hand, and a complete recto-abdominal bimanual examination is thus performed. If the patient is on her back, and the practitioner at her right side, the right hand is most suitable for rectal examination, the left if she is in the left lateral position.

To estimate clearly the state of the parts between the rectum and vagina, the thumb and forefinger of one hand may be passed into the two cavities, or both forefingers may be used, I prefer the latter plan as a general rule. In young virgins, when an examination is imperative, say for suspected hæmatocele or retroversion, the rectal should at first be substituted for the vaginal *toucher*, and in all cases of obstructed genital passages we have in this a useful alternative means of diagnosis. It is also of special value in cases of intra-vaginal tumours, when we desire to ascertain their relations to the uterus above, e.g., in the diagnosis of polypus from inversion of the uterus. It is well for the student to learn early that the cervix uteri can be clearly felt through the rectum, but that it appears there much larger than it does *per vaginam*. I have seen rather absurd mistakes arise from forgetfulness of this. I have no personal experience of Simon of Heidelberg's method of introducing gradually the whole hand into the rectum during anaesthesia, and then bimanually examining the pelvis and lower abdomen as high as the kidney. It can doubtless be done with satisfactory diagnostic results, but at the risk of death from rupture of the peritoneum in the left flank. It is occasionally forgotten by enthusiastic clinical observers that an accurate diagnosis may be purchased too dearly, and that an approximate one may be preferable, if it is more consistent with the recovery of the patient. Care should be taken in all cases of rectal examination to cleanse the fingers afterwards antiseptically, and in addition to lubrication, to previously fill the space below the nail with soap. If the uterus be drawn down by a hook or vulsellum, such as is used with the duck bill speculum, the examination of Douglas's pouch and the back of the uterus *per rectum* is much facilitated.

Examination per Vesicam. The canal of the urethra may be

explored by the little finger without much difficulty, under anaesthetics, but the introduction of the forefinger into the bladder is difficult, or may involve previous dilatation by expanding or coned dilators, and though necessary in certain diseases of the bladder itself, I hardly think it is justified, merely for the light it may throw on the state of the anterior wall of the uterus, or on pelvic exudations between the bladder and vagina. But the ordinary vesical catheter or sound is of great value if used in apposition to the finger in the rectum or vagina. We can thus ascertain very clearly the presence or absence of the uterus above a vaginal tumour of doubtful nature, or obtain other information which the obesity of the patient prevents us from acquiring bi-manually.

Instrumental Methods of Examination.

SPECULA.

The use of specula of various kinds, for the purpose of inspecting the vagina and cervix uteri, for the application of remedies, and for the performance of operations, is now such an acknowledged necessity that, previous to their introduction, gynecology could hardly be said to have commenced its career. Yet medical opinion is still somewhat divided as to the kind of speculum which is most useful under varying circumstances. The educated touch alone can do wonders in the way of diagnosis, but it is nearly always necessary to verify by sight the results obtained, when morbid conditions of the cervix uteri or vagina exist, or when the source of sanguineous, purulent, or other discharges has to be ascertained. Great care must be exercised in the case of malignant disease, and the presence of the hymen, or the existence of painful affections of the vulva, may entirely preclude the use of the speculum, unless with anaesthesia.

Specula are usually divided into three types: (1) The *tubular* or original type, as far as modern practice is concerned; (2) the *valvular*, a modification of this, and (3) the *duck-bill* or Sims's speculum, the latest and best type in many respects, but somewhat unfortunately named, for a duck's bill is certainly bi-valvular.

1. **The tubular form** is, as its name implies, essentially a tube, which can be pushed along the vagina, and which exhibits the parts at its inner extremity. It has been made of a great variety of materials, and with many slight modifications in shape. Of these varieties, in my opinion, all must yield to the Fergusson's speculum (fig. 7), a simple glass tube coated with reflecting mercury and covered with hard black rubber. Its sole drawback—its fragility—is more than compensated for in every other way. The white porcelain specula common in Germany, and nearly all those made of metal, are inferior in illuminating power, and fail to repre-

sent with equal fidelity the true colour of the parts, while the former are almost equally liable to chip, and the latter are injured by almost every substance used in treatment. The so-called unbreakable glass, tried for a time, was a complete failure. The size and shape of the instruments are of great importance, and at least three should always be at hand. These should have a circumference of 3, 4, and 5 inches respectively. They should measure fully six inches at their longest side, and even a little addition to the length is no disadvantage, if the prac-

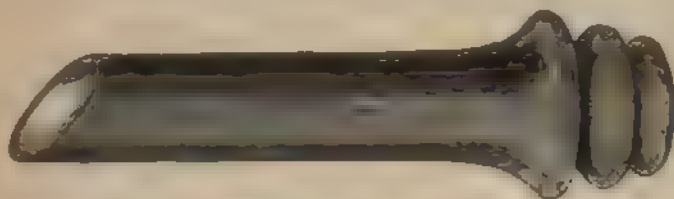


FIG. 7. - Fergusson's Tubular Speculum. - End of tube.

titioner does not require to use them for the introduction of greatly curved instruments, as he need not do. The outer extremity is trumpet shaped, and the other should be well bevelled off. This facilitates introduction, and gives a larger field of vision with the same diameter of instrument. A fourth speculum, of the largest diameter, but not more than five inches long, will occasionally be found useful in applying remedies. The maker's name, or a little patch of white paint on the outer end, should always indicate the longer side of the instrument, as this is difficult to ascertain after introduction, if once lost sight of.

There are two methods of introducing the instrument. In the one the patient is placed in the ordinary left lateral position, not forgetting the necessity of approximating her breech to the operator, and of removing as far as possible from him her head and shoulders. The position of the cervix uteri must first be carefully noted by digital examination, and indeed the whole condition of matters must always be previously ascertained in this manner, as far as possible. The perineum is now gently retracted and the labia are separated by the left forefinger or fingers, and the point of the well-lubricated speculum is placed just within the ostium vaginae. The instrument is first held so that the point, or extremity of its longer side, lies against one of the labia, and it is then gently pushed along the perineum, till the bevelled part is wholly introduced. The point is then turned backwards, and the onward progress is continued, with the point always directed well towards the hollow of the sacrum, till the summit of the vagina appears to be reached. A glance through the instrument will now generally show the cervix uteri, which by a little management

is made to project within. But if the cervix is not thus visible, one of two things has happened, either the instrument has been pushed too far



FIG. 2.—Speculum
Forceps

FIG. 3.—Playfair's
Uterine Applicator

into the *cul-de-sac* behind the cervix, or the point has not been kept sufficiently backwards, and has got in front of the cervix. In either case the remedy is obvious; the instrument is withdrawn a little, and if the cervix is not then seen in front of it, the point is again directed as far backwards as possible, and so pushed behind and beyond the cervix; a little rotatory movement assists in this, but the direction of the point must not be lost sight of. If an instrument of sufficient calibre has been used, the difficulty requires but a little easily required tact to overcome it, and with gentleness and skill at the commencement the largest size may often be used when even the smallest would otherwise give pain. If the cervix be distorted in any direction this will have been ascertained previously, and it may be necessary to hook it down into the instrument with a probe or hooklet. Along with the speculum there must always be at hand some absorbent cotton wool, or tenax, this latter being an exceedingly useful preparation of oakum with fine tar. This is required for the purpose of removing secretions of pus, mucus, or blood, the os uteri being frequently filled with thick tenacious mucus which adheres very persistently. A speculum forceps (fig. 2), and one or more Playfair's probes (fig. 3), form

therefore an essential part of the armamentarium. The former is used to introduce the wool in pledgets, which are renewed as often as necessary; the latter consists of a long wooden handle, terminating in a roughened wire, which can be bent at will. The wool is easily twisted around the wire so as to adhere firmly, and thus armed, the instrument constitutes an admirable means of clearing

out the cervix and of applying remedies within it, or to the uterine cavity. The speculum forceps has many modifications. It is well for the student to learn how to use the tubular speculum, while looking carefully what he is doing at every step, but after a time, no exposure of the person is necessary, the coverlet not being raised till the instrument is *in situ*, and then draped round its extremity. The vaginal wall is best examined during the slow and gradual withdrawal rather than during the introduction of the instrument.

The other method of introducing the specular tube is with the patient in the dorsal position. As it would be impossible to see anything other wise, she must also be brought to the end of the couch or side of the bed, with her knees reared in air, and supported by an assistant in lithotomy fashion, unless she is very muscular and energetic. It may simply be said of this position, that it is opposed, except under strong necessity, to the more than "insular" prejudices of our English women, and of the great majority of their advisers.

2. **The Valvular Specula** are those which, by a more or less simple mechanism, are capable of being expanded at their inner extremity after introduction, and in many instances of being compressed before introduction. For these it is pleaded that they are less painful, that they afford a wider field of view, and that they are more self-retaining than the simple tube, while they allow of a freer use of the sound and other instruments while the uterus is in view or within reach. I doubt the greater painlessness very much, and I prefer in most instances the more brilliant view obtainable by a Ferguson's speculum to the possibly wider view obtained by a valvular one. The self-retention is exceedingly unstable, and the sound can be better used without the aid of either, in ways about to be mentioned. A valvular instrument is therefore not a necessity, though it is occasionally



FIG. 10. Barnes's Bi valvular Speculum.



FIG. 11. Cusco's Bi valvular Speculum.

useful, when, owing to the want of assistance, and to the resilient force of the vagina, the simple tube is liable to be forced out, and the duck-bill



FIG. 12. Meadows's Speculum.

(fig. 10) most resembles the simple tube in everything but the quality of expanding. Cusco's (fig. 11) resembles more the duck-bill, with its accom-



FIG. 13. Knott's Speculum.

panying vaginal repressor.¹ Meadows's quadrivalve (fig. 12), and Knott's trivalve specula (fig. 13), have each their admirers, but the most useful instrument of the sort with which I am acquainted is one introduced by Reid of Glasgow (figs. 14 and 15). It is capable of some parallel and external, as well as merely internal, expansion, and it is clean, simple, and portable in the highest degree. It is described and

figured in the *Am. Jour. of Obstetrics* for 1881, p. 276. I should perhaps also mention Seanzon's instrument (fig. 16), useful when the main object is to examine the vaginal wall.

3. The third type of speculum, the **Duck-bill** (fig. 17), is of comparatively recent introduction. We owe it, and along with it, the greatest possible advances in gynecology, to Dr Marion Sims. The

¹ Galatin strongly insists on the advisability of having the blades of Cusco's and other valvular specula of equal length. "The axis of the uterus is thereby brought nearly into coincidence with that of the vagina." There are, however, some advantages also in making the anterior blade to resemble the vaginal repressor used with a duck-bill, rather than the movable anterior half of a tube.

principle of action of the instrument is this—if a woman be placed upon her knees and chest, or knees and elbows, so that her abdomen is under-



Fig. 14. Closed



Fig. 15. Open

Figs. 14 and 15. Reid's Speculum.

neath her, but unsupported, the abdominal viscera, by their own weight, fall away from the back and pelvis. If an instrument, or even the



FIG. 16. -Scanzoni's Speculum.

finger, be now introduced, so as to open the vulva freely, and repress the perineum, air will enter the vagina, and it becomes an open cavity, its anterior and posterior walls separating widely, and allowing inspection of its contents, and free manipulation of instruments. The story of his first discovery of this is graphically told by Sims in his *Clinical Notes on Uterine Surgery*. If, however, the position just mentioned were always required, the use of the instrument would be very limited; fortunately this is



FIG. 17. -Sims's Duck-bill Speculum.

the use of the instrument would be very limited; fortunately this is

not so. If the patient be first placed in the ordinary left lateral position, and then, if the left arm be carefully drawn backwards from beneath her, while the right leg is passed over the left one, so that the right knee touches the couch, while both knees are well flexed, the patient will lie as in fig. 18. Her thorax and abdomen will face towards the couch, while the width of the pelvis prevents the contact of the abdomen with it, and allows of the traction by gravitation of the abdominal viscera away from the back and pelvic cavity. The right trochanter is further away from the operator than the left, and the posterior commissure of the vulva lies backwards and slightly upwards. This position is so essential to the right use of the instrument that the student should depend on no written description or diagram, but, as one of his first and



FIG. 18. Position for the use of the Duck-bill Speculum.

most important clinical experiences, should learn the necessary steps under the eye of a competent teacher. A wrong position in using the tube means chasiness, discomfort, and delay; in using the duck-bill it means absolute failure. The instrument, as figured above, consists really of two specula of different sizes, and attached by the intervening shank; either may be used, or others of greater or less size, and each might be attached to a separate handle, but there exists a pretty general consensus in favour of retaining the original pattern. One blade is passed within the perineum, with precisely the same precautions as the tube, the convexity backwards. The convex surface only is lubricated, the concave being kept as bright as possible. The point

must pass well into the posterior fornix vaginae. The perineum is then slowly but firmly retracted, while the point of the speculum, behind the cervix, pushes it somewhat forwards into view, though the point is still kept somewhat behind the portion in contact with the perineum. The necessary amount of this manœuvre differs in individual cases, and can be learned only by experience. Under favourable circumstances the vagina now opens up well to view, exposing its interior. But, generally, another instrument is required to press forward the anterior vaginal wall, and give a better view of the higher interior. The handle of a sound, a blunt curette, a copper spatula, or many other things would serve. There are already a score of vaginal repressors with author's names attached to them, but

something like that shown in fig. 19 is the most efficient. Having now obtained a



FIG. 19. Vaginal Repressor (Sims)

fairly clear view of the cervix, the aid of an assistant generally becomes necessary. To him or to her is entrusted the speculum, placed exactly as we wish. He stands directly behind the patient, and must hold the instrument steady and firm without jerking. To hold the instrument by the second blade rather than by the shank is preferable, but requires more training. The vaginal repressor may still be held by the physician, if one hand is sufficient for what remains to be done, if not, the assistant must lean over the patient's elbows and hold the repressor also, leaving both the practitioner's hands at liberty. One other movement of the speculum is very service-



FIG. 20. Uterine Tenaculum.

able, and, indeed, in many cases is quite necessary; instead of drawing the perineum directly backwards, the blade is slightly rotated so as to draw it also a little upwards, and to aid in repressing with the shank the uppermost buttock. The cervix uteri can now be freely inspected, but to obtain a perfect view it must be fixed and more or less drawn downwards. For this purpose, either a hook (fig. 20) or a vulsellum (fig. 21) must be used. Those who practice uterine surgery to any considerable extent will be furnished with a variety of these, but it is sufficient to say here, that a hook bent almost at right angles is the most efficient for an ordinary inspection, that more curved hooks are more

effective for drawing asunder the lips of the cervix when swollen, everted, or torn, and that a vulsellum ensures a more permanent hold, when



FIG. 21. Fine Uterine Vulsellum : also portion of one opening outwards, to display the interior of the Cervix Uteri.

considerable traction is required, and tedious operations are necessary.

Modifications of the duck-bill are becoming almost as numerous



FIG. 22.—Duck-bill Speculum and Vaginal Repressor combined.

as valvular specula, but few of them are improvements, and still fewer seem to commend themselves to the profession for diagnostic purposes. The repressor has been attached to the speculum by a hinge (fig. 22), forming really a sort of bivalve, and most complicated arrangements have been attempted for fixing the instrument *in situ*, and so avoiding the necessity of an assistant in ordinary practice. Of these, Emmet's perineal retractor, as he terms it (fig. 23), is the only one which has made any way in British practice. I

have occasionally found it useful, and, when the vulva is not too rigid, the wide phlange aids materially in keeping back the buttock.

Neugebauer's speculum (fig. 24) is figured by nearly all writers. It

may be used as a duck-bill or as a species of bivalve, but I fail to see any superiority in it to those in ordinary use.

One feels some trepidation in venturing to advise the student or general practitioner as to the relative value of these types of speculum for various purposes. It is a little puzzling to be told that Fergusson's tubular speculum "has probably done more to retard the advance of gynecology than any other cause" (Goodell, *Lessons in Gynecology*, Philadelphia, 1880), while the same author elsewhere states that "it possesses the great advantage of throwing more light on the cervix than does any other speculum, and for that reason is excellent for the examination and treatment of patients at their own homes." The generation which, under the guidance of Simpson, Barnes, Hewitt, Wells, or McClintock, has seen advances in the surgery of the female organs, almost as striking as the still more recent achievements of Sims, Simon, Emmet, or their followers, hardly welcomes the description of itself given by Emmet as "the older members of the profession who have become dexterous in the use of some special instrument," and who "cannot be expected to change it for a new one, or to appreciate the necessity for doing so" (*Princ. and Prac. of Gynecol.*, 2nd ed., 1880). To adopt what is new and good does not compel us to discard what is older and also good. I hope to do full justice to the use of the duck-bill speculum. Many of our most valuable recent improvements in gynecological surgery were impossible without it. Many common affections of the cervix can be best seen by its use, and the specialist, when he can be aided by a skilled male or female assistant, is irresistibly impelled to substitute it more and more for every other form of instrument, even in ordinary examinations: but the practitioner who is compelled to work unaided, will find his wants fulfilled in a large number of cases by the tubular instrument, while he is prepared to use the more modern one, with such assistance as he can procure, whenever he is satisfied that he



FIG. 23. Emmet's Self-retaining Speculum.



FIG. 24.—Nengebauer's Speculum.

cannot otherwise obtain such a view of the parts as is necessary for diagnosis and treatment. He is not likely to be called on, like Dr Emmet, to operate on over 400 cases of vesico-vaginal fistula, and may console himself for his alleged beighted obstinacy, by the fact that English midwifery practice would hardly afford so many opportunities to the whole of British practitioners put together.

The Sims's speculum, with the aid of skilled assistance, and of the repressor and hooklets or vulsella, which are its necessary accompaniments, is undoubtedly the best instrument for obtaining a perfect view of the whole cavity of the vagina, its posterior wall excepted. For most plastic operations its use is imperative. But, to be efficiently used, it does require such assistance as is not always to be had, and it is, in spite of all contradiction, more irksome and disagreeable to the patient than the tube. The greatest disadvantage of the tube, from a diagnostic point of view, is that it compresses the lips of the cervix, and so may conceal great mischief, but if a full-sized instrument can be used, as it generally can in chronic cases, and if the danger be thoroughly kept in mind, it is not impossible to separate the cervical labia sufficiently to avoid error, when diagnosis is alone concerned. A Cusco's or a Reid's bivalve is not open to this objection to the same extent. The important point is for the student so to study the mode of using the duck-bill speculum, when he has opportunities, as never to avoid its use, merely from a consciousness that he has not the requisite skill.

THE UTERINE SOUND.

It has been said of the speculum that, from a diagnostic point of view, it can do little more than verify the conclusions arrived at by the highly educated touch. The same may be said of the uterine sound, with an equal amount of truth and error, and few of our modern instruments of precision might not be dismissed in the same summary way. To Simpson undoubtedly belongs the credit of pressing the uterine sound upon profes-



FIG. 25. Sir J. Y. Simpson's Uterine Sound.

sional notice, although Huguier in France, and Kiwisch at Prague had, about the same time, suggested a similar means of diagnosis. There are many varieties of the instrument now in use, from the stiff German silver one with deep notches and rough knobs (fig. 25), to the fine silver bullet probe. The most useful material is undoubtedly silver, though electro-plated copper answers almost equally well, and, other things being

equal, the depth of the student's or practitioner's pocket should be considered. The instrument should be capable of being bent into any desired shape with the aid of a little force, and should be easily made to assume its original shape, without persistent angularity.

The sound should be neither too thick nor too thin—say No. 6 of English catheter scale. The point should be an olive-shaped bulb, so as to indicate the passage of any obstruction; but this should depend, not on a thickening of the point, but on a thinning of the instrument just below it. There should be no deep notches, and certainly no projections, but a slight clearly-cut nick on the convexity, $2\frac{1}{2}$ inches from the point, should indicate the normal length of the uterus, and three or four others may be added at intervals of an inch. The nail of the directing finger can easily take cognisance of these, while they do not materially influence the breaking or bending points. For cases of great narrowing of the cervix uteri, a common silver bullet probe is used, the cervix being brought within reach by hooklets or tenacula, with the aid of the duck-bill speculum.

Fig. 26 shows a sound of the most useful pattern, the handle, in



FIG. 26. — Form of Uterine Sound recommended by the author.

accordance with the recognised custom, being rough on the concave and smooth on the convex side of the instrument.

For the ordinary use of the sound, the speculum, in any form, is not only unnecessary, but is a distinct hindrance, and this disposes of one of the objections to the tubular instrument. By a digital or bi-manual examination, the position and the mobility of the uterus should be carefully made out, and the instrument should be curved a little more if there is a belief in, or the certainty of, the existence of uterine flexion. It must be remembered, however, that such extra curving of the instrument adds to the primary difficulty of introduction into the cervix. With the patient in the same position as for digital examination, or for the use of the tubular speculum, the left forefinger finds and steadies the cervix uteri, or two fingers are used if there is plenty of room. The right thumb and forefinger hold the sound lightly by the handle, and push it up to the os, guided by the palmar surface of the left forefinger. The direction of the extremity of the cervix, backwards as usual, or forwards in certain cases of version or flexion, indicates the direction in which the point of the sound should at first be passed, and the handle will always assure us how the point lies afterwards, if the guiding finger fail to do so. Once introduced for even half an inch into the cervix, the sound

assists in steadying it. The instrument is now gently urged onwards in the direction of the cervix until it meets with some obstacle. In ordinary cases this will be at the os internum, and it requires only a gentle retraction of the handle towards the perineum, and a little tiring of the obstruction, to overcome the difficulty. The point must now be gently turned backwards, however it may have been introduced at first, if it is believed that the uterus is so turned; and in cases of supposed flexion, either backwards or otherwise, the finger of the left hand must be used to tilt up the body of the uterus, thus diminishing the necessity for unduly bending the sound. In no case must any more force be used than in passing the male metallic catheter, and it is far better to fail, and try again and again, than to use any greater force. The fewer *tours de maître* the operator uses the less danger will there be of producing mischief. In some instances the digital examination may have suggested a uterine displacement which does not really exist, the position of the supposed uterine body being occupied by a tumour or otherwise; and, as one object of the sound is to correct error of this kind, a gentle attempt at passage must next be made in other directions than that which is supposed to be the right one. No written directions can confer the requisite *tactus eruditus*, and the student or tyro is advised not to abstain from the use of the sound in suitable cases, but to be content with safe and cautious attempts, and, in case of failure, to remember that bi-manual examination can, in many cases, supply nearly all the requisite diagnostic information. No laboured argument is required to dispose of this as an objection to the use of the sound in general. When the sound has passed the os internum, or the bend of a flexed uterus, or any small obstacle, it glides along to the fundus, unless the cavity is obstructed or twisted by morbid conditions. If these are believed to exist, owing to the presence of hemorrhage or increased uterine size, a good deal of "coaxing" in different directions is allowable, but no force. In such cases a thin, flexible, male bougie may be tried; but for this, as for the use of the probe, in great contraction of the cervix, it is better to expose the parts by the duck-bill speculum, and to use the instrument as one would probe any sinus in other situations.

The use of the sound is not without danger, even in skilful and cautious hands. The most frequent source of danger lies in the induction of abortion, and abortions thus induced are infinitely more likely than those which are spontaneous to be followed by septicæmia or other forms of metria. I fear that I am not alone among those practising gynecology as the possessor of some sad confessions hereabout. This danger can only be obviated by observing the golden rule—Never pass the sound till you can eliminate pregnancy as a possible condition.

The very strictest inquiries are necessary, and in every case where there can be a doubt, in the married or unmarried, pregnancy should have the benefit of it. There is no doubtful case in which a little time will not clear up the difficulty, and either permit the use of the sound or do away with the necessity for it.

Perforation of the uterus is another possible accident, and one which has happened in able hands, when the uterus was softened by disease. Most gynecologists have heard of or seen cases where the sound has passed a great deal further than it should have done, and the charitable explanation of a dilated Fallopian tube receiving the instrument will rarely hold good. Fortunately, if the sound is clean and aseptic, the result is seldom formidable, though none the less to be deprecated.

Inflammation of the uterus or of its surroundings is occasionally produced by the sound, even when the manipulation is perfect. Whether it is that sometimes the uterus is so sensitive that no precaution will avail, or whether the sound, like the catheter, conveys septic fluids or living septic germs, it must be borne in mind that this is a real danger, imposing the necessity of absolute antiseptic cleanliness, and of being sure that the information to be acquired by the use of the sound is worth the risk, however infrequently that may be encountered.

What, then, are the diagnostic facts ascertainable by the sound? These may be conveniently given under seven heads.

1st. The patency or otherwise of the cervical canal, especially at its extremities. The patency is diminished by

- (a) Congenital contraction or complete atresia, or the permanently infantile state of the organ, or the long conical cervix.
- (b) Contraction from inflammation or other accidents.
- (c) Small polypi or fibroid growths in the cervix.
- (d) Flexion of the uterus at or close to the cervix.
- (e) Spasm of the internal os, which is, however, a condition denied by some authorities.

The cervix is unduly patent in many cases of chronic inflammation or sub-involution, when it has been torn during labour, and, to some extent, during a menstrual period. It may be widely dilated by intra-uterine tumours, or less so by hæmorrhages.

2nd. The size, or at any rate the length, of the whole uterine cavity. The normal length is $2\frac{1}{2}$ inches, and the first nick upon the sound should therefore be close to the os externum when the point is at the fundus. The average post-purous uterus is a trifle longer than the average nulliparous one. The chief causes of increased length are

- (a) Pregnancy, in which condition, the sound, of course, should not be used.

(b) Fibroid uterine tumours, which may twist as well as elongate the canal.

(c) Sub-involution after delivery or abortion.

(d) Chronic inflammation.

(e) Intra-uterine polypi, malignant or other growths

(f) Retained products of conception.

The length of the cavity is sub-normal in

(a) Infantile development.

(b) Senile atrophy.

(c) Super-involution, not common to a high degree.

(d) Inversion of the uterus.

3rd. The direction in which the uterus is lying—forwards, backwards, or to one side. (See Uterine Displacement, Chap. XI.)

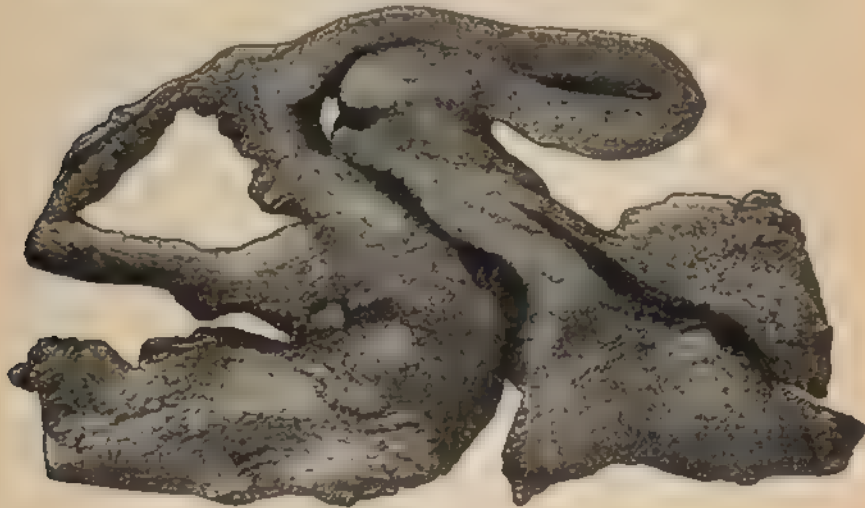


FIG. 27. — Retroverted Uterus tied down by adhesions (after a Photograph by Winkel).

4th. The mobility of the uterus. This is diminished by

(a) Exudations of coagulated lymph or blood in its neighbourhood, or old adhesions resulting therefrom (fig. 27).

(b) Cancerous deposits in or around the uterine body or cervix.

(c) Large tumours of the uterus or neighbouring parts.

(d) The sacral promontory or the utero-sacral ligaments, in some cases of backwards displacement.

The uterine mobility is increased by many of the causes which lead to its displacement (*q.v.*).

5th. The relation of the uterus to neighbouring parts or abnormal growths, and its adhesion to them or the contrary.

6th. The form and localisation of growths or substances within the uterus, more or less approximately.

7th. Tenderness of the internal uterine wall when touched by the sound.

Sometimes, though rarely, the only clear evidence of endometritis is obtained in this way, though, when once ascertained, it is prohibitive of the further use of the instrument.

Of the above conditions, it will be noted that the calibre of the cervical canal can only be ascertained by the sound; the length of the cavity may be surmised from bi-manual measurement, but cannot be certainly arrived at, owing to the varying thickness of the fundal wall. The form of intra-uterine growths, and the tenderness of the intra-uterine lining, are beyond the range of bi-manual examination. The other conditions can be ascertained bi-manually, in some cases more, in others less easily than by the sound. The uses of the instrument as a means of treatment will be referred to when speaking of the methods of replacing the displaced uterus.

I cannot conclude this notice of the sound without mentioning a very ingenious American instrument, patented by Messrs Codman & Shurtleff of Boston as Jennison's (fig. 28). By a skilful use of fine parallel steel



FIG. 28. Jennison's Flexible Uterine Sound.

rods, united at their extremities, and enclosed in an india-rubber sheath, every bend of the instrument which occurs at the intra-uterine end is reproduced in an opposite direction at the other, and thus made visible to the eye; an intentional bending of the outer end produces, on the other hand, an opposite bending of the intra-uterine extremity and uterus. In its present form it is too mobile, but it contains the rudiments of a useful invention for both diagnostic and therapeutic purposes. Other flexible sounds have been proposed to meet the difficulties when the uterine cavity is twisted as well as elongated; but in such cases, where it is necessary to be precise, the elastic gum bougie, or silver probe, with the aid of the duck-ball speculum, meets all wants.

TENTS.

Another means of diagnosis, invaluable in some instances, though less seldom required than the speculum or sound, is the tent. This is used for the purpose of dilating the cervix uteri, and so permitting the passage of the finger into the uterus to explore its cavity, or for the introduction of instruments or medicaments which are otherwise unavailing. For this means we are, as in so many other instances, indebted to Simpson,

although he admits, or rather exulta, in having derived the necessary inspiration from a very remarkable source—Mr John Hall of Stratford-on-Avon, the son-in-law of Shakespeare, who wrote a medical treatise in Latin, wherein he perfectly forecasts the modern sponge-tent. At his death, his wife, Susannah Shakespeare, sold the Latin manuscript to Mr Cook of the neighbouring town of Warwick, who published an English translation in 1637. From this Simpson got the idea—not the only instance in which he turned to practical account his favourite hobby of antiquarian research.

A tent is a small pencil, capable of being introduced into the cervix uteri. It is composed of materials which, absorbing moisture from the fluids about it, expands, and so dilates the canal of the



FIG. 29. Uterine Tents. A, Sponge. B, Laminaria. C, Tupelo.

cervix. Compressed sponge was the substance originally used by Hall and Simpson, and this has, as yet, been only partially superseded by the *Laminaria digitata*, or sea-tangle, of Dr Sloan of Ayr, or by the tupelo wood of Dr Sussdorff of New York. The sponge tent is now made by machinery, and well saturated with carbolic acid or other antiseptic, but it should be less tapering in form than is commonly the case. Fig. 29 shows the usual sponge, laminaria, and

tupelo tents. Each kind varies somewhat in the amount of its expansile power, but, according to my experience, there is also a great variety in this respect among different specimens made of the same substance. Fig. 30 shows the full expansion of tupelo tents of good construction. All tents should be perforated longitudinally, except at their apex, and in the case of the vegetable tents this adds to their power and rapidity of expansion, and it permits of the easy insertion of a probe or wire to guide them into place. They must also be furnished with a strong thread well attached to them, for the purpose of removal.

Many instruments have been devised for the introduction of tents. Forceps of every kind are usually a mistake; the more steady their hold, the more liable are they to adhere to the tent, and wholly or partially to withdraw it again. Barnes's instrument (fig. 31) I find the most useful; but it is better to have the tubular part of metal than of softer material. The tent is impaled on the wire which projects beyond the tubular sheath, and the whole is then used as if it were a uterine sound. The tent is passed, if possible, nearly up to its full length, just projecting beyond the os externum. Sometimes, however, one has to be content with a less complete insertion, to be followed up afterwards by a second instrument. While the wire is withdrawn the sheath is pressed

against the tent, and so prevents its being retracted in the slightest degree. All forms of tent may be introduced in the same way, but when very small ones of lamina or tupelo are required, they may necessitate the use of the duck-bill speculum to allow of the tent being carefully *probed* in, as it were. In all cases it is well to use the largest size that can be insinuated without force, in order to avoid if possible the necessity for a second dilatation. The free use of antiseptics is necessary in every case. All profuse secretions should be washed away, to begin with, by injections of carbolic warm water. In place of one large tent, several small ones of tupelo or lamina may be inserted with advantage side by side; the action obtained seems to be more equal, but, of course, the



FIG. 30.—Expansion of Tupelo Tent (after Munde). The larger figure shows the amount of expansion at which the smaller is capable. The effect of the constriction by the internal os is also shown.

introduction is a little more tedious and troublesome. Several hours are usually required to obtain the full effect, and it is most convenient, and generally quite sufficient, to allow twelve hours—from night till



FIG. 31 Barnes's Tent
Introducer.

morning, or morning till night. During this time the patient must be in bed, and as quiet as possible; this is a *non quid non*. After introduction, a vaginal plug of cotton or tenax, thoroughly soaked in carbolic solution, will tend to prevent slipping, and afford the necessary moisture for expansion, if that is deficient. Immediately on removal of the tent a free vaginal antiseptic washing is imperative, before any attempt at further examination. As there is sometimes considerable pain during the process of dilatation, it is well to insert a morphia suppository into the rectum, or to give a subcutaneous injection of morphia soon after the tent is introduced. If the first tent does not expand sufficiently for the object in view, it must be followed up by a second or a third. Dr Goodell (*op. cit.*, p. 154) calls special attention, however, to what I have long felt to be the fact—that it is not usually, with due precaution, a first tent, but a second, or still more a third, which produces mischief. The reason is obvious enough, there is much greater danger of septic poisoning in dilating a cervix already somewhat cracked and fissured.

The dangers of the tent are real enough to cause every conscientious physician to weigh well the necessity before having recourse to them. Metritis, or inflammation of the surrounding tissues, occurs every now and again, and is, I suppose, almost invariably of septic character. But severe shock, and even tetanus, have been met with as a result of the mere dilatation. The

old fashioned hand made sponge-tents became so horribly fetid in a very short time that it was wonderful how seldom they were followed by serious results; the machine made ones, saturated with antiseptics, are less objectionable. I have never met with any serious inflam-

matory trouble from the use of tents in private, though I have seen several very severe cases of pelvic cellulitis in hospital practice, and the danger may, I believe, be minimised to a very great extent if one can depend on the following conditions being strictly adhered to: The antiseptic washings already mentioned must be matter of invariable routine—the tent itself must be thoroughly smeared with carbolic glycerine or vaseline—or, as Albert Smith recommends in the case of sponge-tents, they may be first well souped and then sprinkled with salycilic acid. If possible, one dilatation must be made to suffice, and, in the event of more being necessary, it is well to avoid sponge for the later ones. One further precaution consists in being especially chary of using tents at all when the patient has previously suffered from uterine or pelvic inflammations.

Every consulting physician must often have met with cases where he has been called, perhaps twenty or thirty miles into the country, to pronounce upon the nature of uterine disease, which cannot be discovered with certainty until the cervix is dilated and the finger introduced into the uterus. He cannot wait for the process of dilatation, in this manner at any rate, nor return next day without much extra trouble and expense; it is very desirable, therefore, that the practitioner in charge of the case should know under what circumstances dilatation is required, and arrange to have it previously accomplished. I have so often seen much disappointment from this source that I think it necessary to call special attention to it.

Authorities are by no means agreed as to the relative value of the three forms of tent in varying circumstances. My experience of the cupelo tent is not yet of very long duration, but I am inclined to think that it may in time be substituted for both the other varieties, unless a still superior material is found; there must be very many suitable vegetable products yet untried. The metallic tube, however, with which they are frequently perforated, is apt to protrude, and might be a source of danger in introduction, but in other respects they seem to me to possess the best qualities of both sponge and laminaria. Like the latter they should always be momentarily soaked in hot water before introduction; this renders them more pliant and easy to introduce, seems to cause them to be less painful, and ensures their speedily commencing to dilate, thereby preventing their slipping.

The sponge-tent, however carefully made, has the undoubted disadvantage of being more liable to produce factor, and although factor or *aprox*, and *separis*, are not interchangeable terms, the alliance between them is perilously close. In expanding, the sponge becomes closely associated with the surrounding tissues, interpenetrating them to a certain extent, and thus giving rise to minute hæmorrhages when forcibly removed: the bearing of this on septicæmic risks is obvious

enough, but there may be some counterbalancing advantages when the tents are used as a curative means. One other disadvantage of the sponge tent is its liability to tear when being withdrawn: either a small portion only may remain, or the thread may be detached, leaving nearly the whole. Removal by forceps is easy enough in theory, but not always so easy in practice, even with the aid of further dilatation. I use the sponge tent therefore only when the os uteri is already pretty large, or when I am desirous of aiming at absorption of cervical growths, as well as at dilatation. Great antiseptic precautions are, of course, necessary, and I hope ere long to be able to substitute the tupelo or other vegetable form even in such cases.

The curative uses of the tent depend on the fact that its pressure within the cervical canal will not infrequently cause the absorption of granulations or small mucous polypi, or even fibroid growths, or chronic thickening of the cervix; so that it is no uncommon event to pass a tent for the purpose of diagnosing the source of uterine hæmorrhage, to find little or nothing, and yet to cure the patient of symptoms which may have lasted a very long time.

Other mechanical means than tents for dilating the cervix, will be referred to later on, when treating of dysmenorrhœa or other affections which require dilatation for curative purposes.

The diagnostic objects attained by tent dilatation are more important than numerous. There are, however, several affections, especially those accompanied by uterine hæmorrhagic discharges, with more or less enlargement of the body of the uterus, which we may suspect, or even diagnose with some amount of confidence, but about which we cannot be absolutely sure, or which we cannot certainly differentiate from one another, unless the cervix uteri will permit us to pass at least a finger into the cavity of the uterus. Among these are—

1. Polypus of the uterus or within the cervical canal.
2. Fibroid growths of the same.
3. Chronic inflammatory granulations of the endometrium.
4. Cancer or sarcoma of the uterine body.
5. Retained products of conception, moles, &c.
6. Retained non-conceptional clots or decidua.

The effect of the pressure of a tent in producing absorption, may also furnish a clue to the differentiation of early cancer of the cervix from chronic inflammatory thickening. My attention was first called to this diagnostic means by Mundé (*Minor Surgical Gynecology*, p. 68), and I have since been able, on more than one occasion, to satisfy myself of the non-existence of malignant disease, from the fact that very considerable absorption took place after the introduction of a tupelo tent, an effect which has remained permanently.

Inspection of Morbid Discharges.

This must be included among the general means of diagnosis, although but a cursory mention of the various forms of discharge met with is required here. The information gathered from this source is, for the most part, merely of a *prima facie* kind, suggesting in most cases the necessity for further investigation, although occasionally we may be called, in the case of young patients or those who are unwilling to undergo further investigation, to act upon the imperfect *data* thus afforded. Whenever curative means are adopted merely on the ground of the discharges observed, the practitioner must never forget that he is acting entirely in the dark, and that he may be ignoring serious or fatal diseases, during the only period at which any steps could be taken for their removal. The existence of discharges may be recognised either by the patient's own description, by inspection of the genitals, or by the use of the speculum. In perfect health there is just sufficient mucous discharge to lubricate the passages, preventing dryness or discomfort, but hardly, if at all, appearing externally. This discharge, apart from the menstrual period, may be increased, diminished, or altered in various ways. We may have—

1st. *A white, flocculent, or curdy discharge*, sometimes seen with the speculum in considerable quantities. This is purely vaginal, and shows increased desquamation, and over-activity of the vaginal glands.

2nd. *Purulent or muco-purulent discharge*. This may come from the vulva, vagina, or uterus, or from abscess opening into any of these. If very profuse externally, it is probably from the vagina, or, especially if quite purulent, from abscess. In the latter case we shall have a history of pelvic or other inflammations; in the former we may have one of gonorrhœa or acute vaginitis, or the symptoms may be chronic and of gradual invasion. Acute vulvitis tells its own tale. Vaginal discharge is acid in reaction, and freely mixed with, or almost composed of, the tessellated epithelium of the part, while uterine discharge is alkaline, and contains columnar epithelium; but although this is repeated from text-book to text-book, the physician does not rely on his microscope or his test papers for information which he can acquire by the eye, aided when necessary by the speculum. The marked acidity of the vaginal secretion is, however, of importance, as its influence on the spermatozoa is sometimes a cause of sterility.

3rd. *Clear glutinous discharge*, like unboiled white of egg. This is seldom met with externally, except on the rupture of a cyst, but with the speculum it may frequently be seen oozing from the cervix uteri, and is

a sign of one stage of chronic inflammation of the uterine mucous membrane, generally of its cervical part. Each of the foregoing three discharges is generally described as leucorrhœa or "whites," unless pus be present in very large quantities.

4th. *Watery discharges* are most frequently met with in cancerous disease, and should always excite suspicion of this, whether fetid or not; but they are also met with during pregnancy, especially in molar pregnancy, or in the presence of benign tumours, or of that rare affection known as hydrometra.

5th. *Fetid discharges* may be caused by the want of ordinary cleanliness, or by neglected pessaries; but, especially if of a watery and sanguineous character, they should always lead to an examination to ascertain the presence or absence of cancer. I have never been quite able to satisfy myself as to the specific smell of cancerous discharge, and I have known a case where a retained sponge tent satisfied more than one acute physician that cancer was present. Generally the odour of cancer is distinctive enough, but the retained products of conception, polypi, or in fact anything which keeps back intra-uterine discharges, may give rise to fetor which I at least cannot distinguish from it.

6th. *Sanguineous discharge*, other than menstrual, will afterwards be treated of as metrorrhagia. Its occurrence from slight causes, or after the menstrual age is past, should never be overlooked. It is an occasional symptom of so many diseases that it is hardly possible to attempt their enumeration now. It may occur in the most common forms of chronic uterine inflammation, in slight vascular growths of the vulva, and in other minor affections, and yet it is the most common, and often the earliest indication of the gravest and most fatal disease. The only possible deduction from this is, never to neglect a careful local examination when this symptom is present.

The *solid discharges* which are occasionally met with are, for the most part, either blood-clots or the products of conception, great care being required, as every obstetrician knows, to distinguish between the two. Abnormal conception may furnish either the fleshy mole or the vesicles of the hydatigenuous mole. In addition to these we may have the unimpregnated decidua, afterwards to be referred to when speaking of dysmenorrhœa, or much more rarely, complete blood casts of the uterus, which are independent of pregnancy, or polypi which have become separated and are expelled by the unaided contractions of the uterus, or fibroid tumours which have undergone calcification and expulsion, subsequent to more or less degeneration of their structure, or casts of the vaginal wall, whose microscopic character is sufficient, if such evidence is required, to attest their nature.

Other means or methods not now referred to may occasionally serve

diagnostic purposes. The *endoscope*, for instance, is worthy of mention, but the information derived from its present developments is meagre in the extreme. The *curvite* serves the purpose of obtaining substances scraped from the uterus for microscopic investigation; but it will be more appropriately described as an instrument for treatment (Chap. III.). The same remark applies to the *aspirator* and *exploring needle*.

CHAPTER II.

DISEASES OF THE EXTERNAL GENITAL ORGANS OF THE FEMALE. Aphthæ. Herpes. Diphtheria. Lichen. Aids. Eczema. Parasitæ. Warts. Erosia. Ulcera. Pruritus. Syphilis. Cancer. Lepra. Noma. Vaginitis. Abcessus. Cystæ. Varicellæ. Tumoribus. Hemorrh. Hydrorhæ. Leucorrh. Hypertrøph. Vascular catarrhes and degenerations. Fissuræ. Adhærentia. Abnormalities of the Hymen. Coercipolym. Ruptured perineum, &c.

THE DISEASES of the external organs of generation are deserving of more

attention than they sometimes receive from students of gynecology. I do not so much refer to those which, like cancer, compel attention by their dangerous or fatal character, or to those which, like ruptured perineum, have a special interest for the operating surgeon, but to many common ailments which by their chronicity tend to produce much constant and unbearable suffering, and thus embitter the lives of not a few women. This chronicity is not always due to the nature of the affections themselves, but depends also on the fact that many women have a greater reluctance to seek for early advice in such cases, where they know that a visual examination will be required, than they have in the diseases of the internal organs, where there is more of the unknown and therefore of that which is dreaded, and when they hope that a mere digital examination will suffice. This mental condition certainly exists, especially in private practice, and I have known ladies driven almost to the verge of insanity by simple and



FIG. 32.—External organs of generation of the female. 1. Labia majora. 2. Labia minora. 3. Clitoris. 4. Urethra. 5. Vaginal opening. 6. Vagina. 7. Vagina + hymen. 8. Opening of duct of glands of Bartholin. 9. Duct of Bartholin. 10. Duct of Skene's gland.

curable eruptions before they would apply for advice. Little need be

said as to the methods of examination necessary in these cases. The ordinary position on the side is most unsatisfactory for a minute inspection of the external organs. If the seat of suffering is very definitely localised by the patient, we may examine in this way in the first instance, but in all cases where there is the slightest difficulty or doubt about the nature of the disease, the patient must be examined in the dorsal position and opposite to a good light. The vulva can thus be easily exposed to view by the fingers of the left hand, while the right is at liberty to search for painful points or to use remedies. I have known much tedious suffering result from the neglect of this precaution. A common silver probe and a good magnifying glass are frequently of use to minutely localise pain or to inspect small hyperæsthetic points.

Superficial Affections of the Skin or Mucous Membrane.

Almost every skin affection may affect the vulva or its surroundings, but it will suffice to mention those of common occurrence, or which have any special characters when here met with.

Aphthæ are not infrequent on the mucous surfaces of the vulva. They have the same histological characters as those of the mouth, and to the eye present the appearance of one or more, generally many, white raised spots, with more or less angry redness surrounding them. They cause much itching and smarting, especially the latter. I have never been able to identify or associate them with any particular condition of system or ill health, having met with them in those who were perfectly robust, and who had no irritating uterine or vaginal discharges. They readily yield to treatment by a saturated chlorate of potash lotion, or a weak solution of carbolic acid (1 in 10), or one of hypsulphite of sodium (5i. ad 3i.).

Herpes, similar in character to herpes preputialis, I have seen occasionally in the neighbourhood of the clitoris, and the same care is required, as in the male, not rashly to mistake this for chancre. If the part is kept well smeared with vaseline to prevent friction, or the contact of irritating discharges, the herpes soon disappears. Herpes Zoster of the groin and flank sometimes extends to the labium externum (Tait).

Diphtheritic exudation on the vulva and vagina is merely mentioned here as occasionally occurring in connection with the systemic disease of which it is the exanthem. In the post-partum state I have occasionally seen an exudation closely resembling diphtheria, but not necessarily

accompanied by fever or prostration. Schröder (*Ziemszen's Cyclopædia*, vol. x. p. 494) speaks of this, and of a diphtheritic affection accompanying wounds of the vagina. I have had no opportunity of microscopically studying it; but I think it is more allied to aphthæ, and it certainly yields to the same treatment.

Lichen often occurs on and around the pubes, and is best healed by dusting with a fine powder of starch and boracic acid, kept free from all admixture with moisture. If acute, as it frequently is, it will require the same constitutional treatment as when occurring elsewhere.

Acne is very common on the pubes, and extends downwards on the external surface of the labia, even encroaching on the mucous edges. It is often very painful in this position, and simulates or runs into the inflammatory condition of true furuncle or boil. I have not found the application of sulphur in powder, or as a glycerole, so useful here as it undoubtedly is in acne of the face or bust. The sufferers are generally out of health and require tonic regimen. I have found eucalyptus oil and vaseline (5i. ad ʒi.) of service externally, but probably any antiseptic that was not too irritating would have the same effect in preventing suppuration, and leading to absorption.

Eczema is by far the most common of the skin affections which attack the external organs; and whether it affects the mucous surface of the labia or their outer surface, or spreads to the abdomen, perineum, nates, or thighs, it is usually a source of intolerable discomfort. The itching it produces is sometimes sufficient to drive the patient from society; and when by scratching, which is utterly uncontrollable, and by the drying up of the discharges, crusts and cracks are formed, and these again are rendered sodden by fresh discharge from the eczema itself, or from the mucous tracts above, the condition of the patient becomes most pitiable. The *diagnosis*, when eczema has lasted long, may present some difficulty, and yet is of great importance; but fortunately it can always be arrived at by a careful inspection of the outer parts of the diseased surface. The centre may be converted into a cracked, bleeding, and even suppurating mass, but the circumference will exhibit the characteristic appearances of eczema. It is, of course, not uncommon to have an eczematous rash surrounding any affection of the vulva; but the gradual shading of the outer into the inner parts, and the absence of signs of syphilis or cancer, will prevent mistakes in diagnosis. When eczema occurs on the pubes, abdomen, or thighs, there are occasionally the same difficulties that meet us in other regions in distinguishing it from lichen or impetigo. Fortunately, they are frequently difficulties of nomenclature rather than of any more important nature.

The *treatment* of eczema, when developed to any extent in these regions, is often most difficult; and the tendency to recurrence or

exacerbation is most exasperating, but patience on the part of doctor and patient is ultimately followed by success. The existence of diabetes as a frequent cause should not be overlooked. Above all things, constant attention to cleanliness is required. Simple soap and water can do wonders here, as in so many other affections, but the soap must be of the blandest kind that can be procured. Premising that we insist on at least two or three ablutions daily, and more if there is any free vaginal discharge, there are innumerable local remedies recommended for eczema in works on Dermatology, to which I must refer my readers. Here I will mention only those which have especially commended themselves to myself, or to others engaged in the practice of gynecology. Whatever applications are used, any adherent crusts must first be removed by bathing, poulticing, and softening with olive oil.

Lame water applied warm will often afford the relief which alkalies generally do in eczema elsewhere. Solutions of opium, morphia, or belladonna may be added to any of the following local applications. Dilute hydrocyanic acid (Mv.-x. ad 3i.) is also highly comforting to the patient. The glycerole of acetate of lead (gr. x. ss. ad 3i.) will often in a very short time produce a satisfactory change in the appearance of the rash, and should have a foremost trial; any of the glyceroles used should be carefully painted on the surface with a soft brush. Zinc ointment, made with vaseline instead of lard, is another useful and soothing application; or, still better, *Zinci oleat.*, 3i. ad *vaselin. alb.* 3ii. Oil of stavesacre (1 pt. in 8 of vaseline) has been highly recommended, but is apt to be too irritating in many cases; it is of more use in the itching of pruritus. When there is much inflammation surrounding the parts, demulcent lotions, not too thick, of slippery elm or marshmallow, must prepare the way for more active remedies.

One could, of course, fill a page with the mere names of remedies which have from time to time been lauded, but the following must suffice:—Vaseline simply; the glyceroles of the following: tar, boracic acid, carbolic acid (weak); salicylic acid; the oleate of lead or of zinc, diluted as above; chloral (3ss. - 3i. ad 3i. glycerine) and unguentum acid. chrysophanic. 3ss. ad 3i. It need hardly be said that the same attempt, as in other forms of eczema, must be made to reach any constitutional causes by tonics, arsenic, anti-rheumatic or anti-arthritis remedies, &c.

Parasites the *acarus scabiei*, and the various forms of lice are not infrequently met with, especially in old people. One form the *pediculus pubis* by no means confined to the aged, makes this part its especial seat, and partially buries itself beneath the cuticle. The result of any of these parasites is to produce itching, and they will be referred to again when speaking of pruritus. The *pediculus pubis* is speedily

destroyed by any mercurial, 3 or 4 gra. of bichloride in the ounce of water being the cleanest.

Warts.—Simple warts, independently of gonorrhœa, are occasionally found on the vulva, but they are then usually an indication of great want of cleanliness. The remedy lies in the use of scissors and the reform of the personal habits. Gonorrhœal warts will yield to cleanliness and an occasional touch with the concentrated solution of permanganate of potash or tincture of iodine, or they must be clipped off.

Boils.—True furuncles are apt to occur on the external genitalia. As elsewhere, they not infrequently depend on the inflammation set up in a hair follicle by the avulsion of its hair; they are occasionally also developed within a spot of acne, spreading from it into the connective tissue. Although poulticing gives relief, there is the usual danger of its spreading the disease to other hair follicles or scratches. Tincture of iodine applied at once seems sometimes to arrest them, and failing that, a paste of chalk and oil freely saturated with carbolic acid or eucalyptus seems to prevent undue suppuration.

Oedema of the vulva occurs in connection with dropsy of the lower extremities. It is also met with during pregnancy, and, when great, should always lead to suspicion of renal disease, and an examination of the urine. During the occurrence of vulvitis or vaginitis, it is also not infrequently encountered; and I mention this here especially because some authorities have looked upon oedema of the labia under these circumstances as affording a diagnostic point between gonorrhœal and simple inflammation. I am satisfied that it occurs more frequently in the former; but I would strongly advise that too much importance should not be attached to the circumstance, especially when character or any legal decision is at stake.

Pruritus.—I have included this among the affections of the vulva,—not as a special skin disease, described by Willan and his followers as *prurigo*,—but considering it to be, like pruritus ani, a mere symptom, depending on a great variety of causes, though in individual cases the search for the cause is sometimes completely baffled. It is met with at all ages, though most frequently, in extreme degrees, in the old. All that has been said with regard to the misery produced by eczema is applicable to pruritus in a still greater degree; and the two things are not infrequently met with together, as cause and effect, or as mutual effects of some other affection, but they should not be confounded. It should be clearly understood that pruritus may exist, and that for years, without the appearance of any eruption of the parts affected. I had such a case in a young lady in whom I tried every remedy that I could devise or hear of, for several years, without effect. It was what would be termed a pure hyperæsthetic neurosis. Suddenly she was attacked

with acute lichen of the chest, back, and abdomen. I treated this with the simplest soothing applications and an occasional purge. At the end of three weeks, it and her four or five years' tormentor were gone. In popular language, it "came out."

Causæ.—No one can be long in general practice without encountering this troublesome affection, and the practitioner should therefore be prepared to recognise the very various causes on which it may depend. Much patient attention will be required, and success will depend on occasionally reviewing the list, to make sure that no probable factor has been overlooked. Such a list should include at least the following:—

- (1) Leucorrhœal discharges from the vagina, uterus, or vulva.
- (2) Watery discharges of cancer.
- (3) Incontinence of urine, with or without fistula.
- (4) Diabetes mellitus.
- (5) Lithæmia, oxaluria, or other irritating conditions of the urine.
- (6) Cystitis, or urinary calculus.
- (7) External parasites—pediculi and scabies.
- (8) Ascarides or other parasites of the vagina or rectum.
- (9) Stunted or broken hairs.
- (10) Eczema or other local eruptions.
- (11) Varicose or lymphatic enlargements of the vulva.
- (12) Pregnancy.
- (13) The menstrual period.
- (14) Chronic metritis, polypi, or displacements of the uterus.
- (15) Diathetic states—gout, rheumatism, &c.
- (16) A hyperæsthetic state of the nervous system.

The *treatment* of most of these possible causes of pruritus either has been or will be separately referred to elsewhere, and can only be cursorily dealt with here.

Leucorrhœal discharge from the vulva or vagina must be kept down by frequent ablutions and injections of medicated fluids. If of an inflammatory nature, these injections must be bland and tepid, otherwise they must be astringent and antiseptic, as recommended for chronic vaginitis. The irritation dependent on uterine discharges can be mitigated by applying a small pad of cotton-wool, moistened with the glyceroles of tannin and carbolic acid, to the cervix uteri, twice or thrice daily. It is removed by a thread which is tied around it before introduction, and left hanging from the vulva, and the syringe is freely used after its removal. The same applies to the discharges of uterine cancer as long as they are in moderate quantity.

Dribbling of urine must be treated on general principles, if not due to any rent of the bladder or urethra. It is frequent in elderly women who suffer from a lax condition of the vaginal wall. Local astringent

lotions or pessaries, strychnine, or other nerve tonics, and careful attention to the wants of nature are indicated, and the catheter may be temporarily required until a healthier state of the external parts is brought about (*see* Chap. XXI.). In every case of continuous pruritus the urine should be carefully examined, and sometimes a very little attention to the correction of common abnormalities will be followed by good results. But the state of diabetes mellitus especially produces some of the most troublesome cases of pruritus, and that even in instances where the urine is not materially increased in quantity. Nervous erythema is much increased in diabetes, but it would appear to be the saccharine urine which is chiefly at fault, not only by its irritating crystals, but doubtless on account of some degree of fermentation. Add to this the tendency to eczema which it induces, not only locally, but in other parts of the body, and we have no want of causation for diabetic pruritus. Frequent tepid syringing and bathing are the chief resources, and, in aggravated cases, the use of the catheter may be required if the urethra is not too tender.

The possibility of the existence of external parasites, especially of the pediculus pubis or vestimenti, or of the acarus scabiei, must not be forgotten. The bichloride of mercury solution will speedily destroy the former source of trouble, but in some old people there is a strong tendency to recurrent attacks. Scabies must be treated by sulphur or carbolic acid in the form of ointment. Ascarides may act by mere reflex irritation conveyed to the sympathetic nerves, but they may pass into the vagina and vulva, and thus become more direct agents. Infusion of quassia, lime-water, or iron (T. ferr. perchlor., \mathfrak{ss} . ad \mathfrak{Oj} .) injected into the rectum will get rid of these. The vagina itself often harbours the oidium, leptothrix, trichomonas, and various infusoria, which are doubtless highly irritating, and nearly all the specific remedies which have a reputation in pruritus are antiseptics or parasiticides. Occasionally the presence of stunted or broken hairs around the margin of the vulva has been noted as a cause. Such cases are hardly of frequent occurrence, but would, when recognised, demand the administration of anaesthetics and the careful and complete epilation of all offending hairs. Eczema, lichen, and other eruptions are frequently accompanied by an amount of itching out of all proportion to their extent or severity, and this symptom, as pruritus, may precede or succeed this appearance. Their treatment has already been referred to.

Pregnancy is frequently accompanied by very distressing pruritus, and this may be due either to irritating discharge, to the swollen and varicose state of the pudenda so often produced by it, or to a simple hyperaesthetic state similar to that produced in other organs. Tepid bathing, and syringing with one or other of the lotions given below, and atten-

tion to the bowels, or the use of an abdominal belt to diminish engorgement of the pelvic viscera, are the suitable precautions. Occasionally the menstrual discharge is peculiarly irritating, and gives rise to temporary pruritus. I know of no way of altering this, or the similar condition in pregnancy, by internal remedies; tepid syringing is the only resource. Chronic metritis is a frequent cause, by the irritation of its discharges; but, independently of that, it and uterine displacements, and even fibroid tumours, are sometimes the causes, much as pregnancy is, by their effect on the pelvic circulation, or by reflex irritation. A careful examination for recognisable disease of the uterus or its appendages, and corresponding treatment, must therefore precede all but the most simple attempts to cure pruritus. We cannot enter here into the subject of the various diathetic diseases. Gout, or those general states which are recognised as belonging to the same class, may be suspected, as in so many other neuroses and skin affections, if there is a family history pointing to it, and its antidotes, medicinal, dietetic, and hydro-therapeutic, may be tried.

Do what we will, however, to place the treatment of pruritus on a certain basis by ascertaining its causes, we are driven sometimes, as with jaundice, or dropsy, or menstrual disorders, which are but symptoms, to fall back on pure empiricism. Bromides, chloral, or even opiates internally have their place, but the two latter should only be used under a sense of deep responsibility. Everything that is included in the widest definition of tonic treatment is generally in the right direction, and a list of only a few of the local remedies that have been used empirically must conclude these therapeutic suggestions. Some of these will be found useful, even while attempts are being made to get at the disease by removing its cause. For vaginal injections the following substances are recommended, and they may be combined when their chemical nature will allow. The figure attached to each of the first five refers to the quantity to be used per ounce:

Ac. carbolic, gr. x. and upwards

Liq. plumbi acetat., ℥ss.

Acid. borac., ad sat.

Acid. hydrocyanic. dil., ℥x.

Sulpho-carbolate of zinc, gr. x.

Tobacco I have never used, but it is recommended by many—one drachm infused in a pint of water.

Potash ad. sat., and *sulphurous acid* ℥i. ad ℥i.

Glycerine is in some cases found too irritating as a solvent for outward applications; when that is found to be the case, olive oil must be substituted, and all the above substances may thus be applied to the itching surface frequently during the day.

Mercurial lotions, such as black wash, or a lotion of bichloride of

mercury and hydrocyanic acid, or chloroform (1 pt. to 10 of olive oil), and *Ol. Staphisag.* \mathfrak{z} i. ad. *vaa. alb.* \mathfrak{z} i., may be added to our list of local applications, which might be almost indefinitely extended, but those substances now named are the most reliable.

Syphilis.

Few cases of primary syphilis come under the notice of the gynaecologist, and in general practice, while secondary forms of the disease are by no means rare, primary affections are uncommon in the female. We will therefore follow the example of most writers on gynaecology, and leave those more conversant with the subject to discuss the various forms of chancre, their supposed duality of type, and the like questions concerning them. Even the special syphilologist sees the primary chancre much less frequently in woman than in man; it has most frequently healed before the case comes under his notice. The site is rarely on the cervix uteri, where it could easily be seen by the speculum. Amid the folds or rugæ of the vagina detection is often very difficult, and when a hard chancre occurs on the vulva, it frequently resembles so much to the patient a spot of acne that she waits complacently for its disappearance. The sore may even be at a considerable distance from the vulva, on the mons veneris or thigh—the infectious matter having reached the seat of a scratch or a pimple, or a torn hair follicle. There should seldom be any great difficulty in deciding on the diagnosis of a primary chancre when it is seen. Lupus or cancer might for a time be mistaken for the small cup-shaped ulcer with its hardened base, or for the more widely ulcerating or phagedenic form. But the progress is essentially different; the soft chancre is frequently multiple, whereas cancer springs usually from one centre, and in case of necessity we can fall back on the test by inoculation. A due knowledge of chancre as it occurs in the male, and a little of that mother-wit which is required in all cases where there are motives for concealment, should avoid error.

The possible influence of the syphilitic dyscrasia on all chronic affections, especially those of a hypertrophic character, must ever be borne in mind in every branch of practice, and especially by the gynaecologist.

Condyloina, or mucous tubercle, is a form of soft flattened warty excrescence without pedicle, met with especially in women of uncleanly habits. These growths are of a reddish-grey colour, varying according to the amount of their vascularity. Microscopically they are very similar to warts, but less firm in texture—more papillary, less fibrous. They may exist as small separate patches, or sprout over the whole vulva, and invade the surrounding skin. Opinions differ as to whether they are always specific; but setting aside one or two cases

which might be more properly described as soft warts, I have never seen one where I had any doubt as to its real syphilitic character. Gonorrhœa or uncleanness will cause warts; they will also materially aggravate, but not alone cause condylomata. These growths are also undoubtedly infectious to the male, probably a much more frequent source of infection than the primary chancre, and I think I can say with almost positive certainty that I have seen both what is termed a hard infecting and a soft non-infecting chancre derived from this source. Considering the strongly infecting properties of these growths, it is astonishing how rapidly curable they are in the majority of cases. Soap and water, liberally and frequently used, act almost like a charm. A little calomel and oxide of zinc, in equal parts, carefully applied to the surface, will usually complete the cure in a very short time.

But the constitutional disease is still existent, and must be met by antisymphilitic treatment, or the affection speedily returns. I may venture here to express my own opinion as to the relative value of iodine and mercury in the treatment of secondary or even tertiary syphilis, as we meet with it now-a-days. Commencing practice as a pupil of Syme and Hughes Bennett, I was opposed to the use of mercury, and thought that I could easily demonstrate the efficiency of a non-mercurial treatment. The patients got well, but being for some years in a more or less general practice, I was able to trace their subsequent career, and I had ample evidence that the dyscrasia was left more untouched than in those who were treated by mercury in small and long-continued doses. In secondary, and still more in tertiary syphilis, iodide of potassium in full doses will certainly often produce the most immediate and striking results, a very important matter when brain or other delicate tissues are involved; but permanent results are still more thoroughly attained by small and long-continued doses of mercury, combined with quinine and iron.

In very obstinate cases of condyloma the application of strong escharotics, such as nitric acid, acid nitrate of mercury, or the actual cautery, may be required, but such cases must be very rare. The true condylomata are too extended in their attachments to be amenable to excision by scissors, therein differing from simple warts, which have a firmer basis of connective tissue, constituting more or less of a distinct pedicle.

Cancer.

Cancer of the vulva almost invariably assumes the form of epithelioma. Other forms when met with are nearly always extensions from the parts above. The clitoris is perhaps the most common site of commencement

the disease spreading thence to the nymphæ or labia majora, but it may originate in any part. The first phenomenon is that of a small irritable tubercle which ulcerates in a very short time. There may be an attempt at scabbing, but in spite of this the sore rapidly extends, and the thick indurated edge, hanging over the angry advancing ulcer, is most diagnostic. When commencing on the inside of the labia, there is sometimes at the first a condition of the mucous membrane which might be mistaken for granular or follicular inflammation. There is, however, an indurated base underneath, and after a short time true ulceration shows itself. This form usually occurs in elderly women, and I have known it treated for a considerable time as vulvitis or vaginitis. Another form, consisting of a sort of cauliflower excrescence of the labium, with free watery discharge, is occasionally found in old, feeble, women, and has been named "oozing tumour of the labium." In all forms the inguinal and pelvic glands become speedily affected. Continuous pain, hæmorrhagic and fetid watery discharges, in time lead to the death of the patient, but this is more often due to the secondary invasions elsewhere and to the general cachexia thus resulting.

Treatment, to be of any use, must follow immediately and energetically on diagnosis. Excision of the whole diseased surface, whenever there is the remotest chance of reaching healthy tissue, must be performed, and the patient should have the benefit of any doubt that may exist on the point. The knife is attended with considerable risk of hæmorrhage, which, though it may be arrested by styptics and pressure, diminishes the already failing strength of the patient. Cham or wire ecraseurs are too clumsy, and the sharp cutting heated platinum wire of the galvanic cautery (fig. 56) is by far the most efficient instrument. The heated knife of a Paquelin's cautery (fig. 57) is also very effective in excision of such parts. The local application of bromine (1 part in 5 of spirit) or of nitrate of mercury, or of salicylic acid and collodion (5*℥*. ad 5*℥*.) may for a time arrest progress and give temporary relief, but in any case where there is the faintest hope of cure or of any long suspension of activity, excision by the cautery knife or ecraseur is to be performed.

Lupus (*Esthiomene*).

Lupus of the external organs of generation is hardly so common as the same disease affecting the face. It occurs in badly nourished strumous women, generally between the ages of twenty and thirty. Without attempting here to discuss its pathology, it has always appeared to me to be one of those affections whose careful study would serve to throw light on the evolution of disease, so gracefully discussed by Sir

James Paget in the first Bradshaw lecture. Its resemblance, and also its dissimilarities to syphilis, scrofula, and epithelial cancer, point to a possible intermediate stage in development. The majority of writers, however, consider it to be only a manifestation of scrofula. Clinically we have a sore which alternately ulcerates and heals, creeping around the vulva, and leaving a depressed white scar to mark each step in its continuous progress. The sores are preceded by flattish discoloured tubercles, which are often very slow in ulcerating. As a rule, there is not much pain. Progress, though slow, is only too sure, and large tracts are covered with cicatricial contracted tissues before the disease comes to an end, if it does so during the life of the patient.

As regards *treatment*, tonics, cod-liver oil, iodine, and arsenic appear, under good hygienic conditions, to exert a somewhat favourable influence. They tend to induce, and may perpetuate, the cicatricial stage. Though removal by galvanic cautery, or by the most powerful escharotics, often fails to arrest progress, yet it may temporarily check the disease, and give time for constitutional treatment. Of late years, most successful results have been obtained by Volkmann, Yeats, and others, by thoroughly scraping off the surface, but I have as yet had no experience of this in lupus of the vulva. Should the cicatrices threaten to occlude the canal, the frequent passage of a large bougie may to some extent obviate this danger.

Noma.

Under this name has been described a gangrenous condition which, as a sequel of the zymotic diseases, or of the septic or pyæmic puerperal affections, or as a manifestation of epidemic or sporadic erysipelas, sometimes attacks the external parts of generation, as it may also do the face. Dr Hermann records some cases of each kind in the *Obstetrical Transactions*, vol. xxv. p. 141. It seems to be a mistake to have given the this affection special name. It is simply gangrene, a sign of low vitality and embolic changes. Antiseptic poultices and liberal nutrition, with wine, as it may be thought desirable, are our only resource. If sufficient vitality can be maintained to permit of separation of the slough before a vital part is reached, the patient may be saved.

Vulvitis.

The vulva is not infrequently the seat of acute inflammation, and this may either be simply catarrhal, from cold or injury, or it may ensue from the spreading of vaginal inflammation downwards, or it may be

gonorrhoeal. In each case the symptoms present so much similarity that it is most difficult by these alone to diagnose between the specific and non-specific cases. General redness of surface, with perhaps temporary dryness, heat, tingling, itching, and smarting, speedily followed by swelling and profuse muco-purulent or purulent discharge, constitute the common symptoms. In the adult the acute cases are mostly gonorrhoeal, and there are a few points which, though separately insufficient to prove anything, by their combination, render the diagnosis of gonorrhoea moderately certain. Great acuteness and suddenness of onset, the absence of other recognisable causes, much scalding urination, the presence of pus in the urethra, ascertained by forward pressure with the finger, and oedema of the labia as before mentioned, are characteristic of the specific form, while a more free admixture of mucus with the pus points rather to the other. Additional aids to diagnosis are the factor of the discharge in the specific form; its transmission to the male (which may, however, occur in the simple form); the greater frequency of abscess of the vulvo-vaginal glands, and of buboes. But no matter how convinced the practitioner may feel, these symptoms will never justify him in asserting that he has positive proof of gonorrhoea when such a statement must be held as evidence of inelasticity. As an occasional cause of acute, sub-acute, or chronic vulvitis, we may also note irritating vaginal or other discharges. Nearly every one of those circumstances mentioned at page 41 as among the occasional causes of pruritus may also induce vulvitis.

Vulvitis is not infrequently met with in young children or even infants, and here there is a necessity for still greater caution. Want of cleanliness alone will suffice to produce the affection, so may injuries of a perfectly innocent character, so may the presence of ascarides, though Matthew Duncan throws doubt on this, and in scarlatina or other zymotic diseases, rather acute vulvitis sometimes occurs. Let the young practitioner beware of such cases, and remember, that however circumstantial the accounts of criminal assault given by the young patient herself, or, at second hand, by her friends, purulent vulvitis is no proof of such assaults, and has most commonly nothing to do with them. The evidence derivable from injury to the perineum, &c., is, of course, stronger.

Occasionally the inflammation of vulvitis spreads to the subjacent connective tissue, giving rise to abscess or furuncles. It may also pass into the ducts of the glands of Bartholinus (fig. 32), with the same result as to abscess,—it may spread upwards to the bladder, giving rise to cystitis, and it may pass along the vagina to the uterus, or Fallopian tubes, or peritoneum, giving rise to painful diseases of these organs, or even to fatal issues, which will be subsequently referred to.

When vulvitis becomes chronic, it is often exceedingly obstinate, and may by its continual irritation give rise to considerable hypertrophy, especially of the nymphæ.

One form deserves special mention. Like the inflammations of other mucous surfaces, vulvitis may assume a *follicular* form, that is to say, the mucous or submucous glands may be chiefly affected (fig. 33). Such cases are usually subacute; they occur not infrequently during pregnancy, and they have rarely a specific origin. The redness and swelling or purulent contents of the inflamed glands give to the surface a granular appearance; there is less purulent discharge, and this is often mixed with or replaced by a white cheesy-looking secretion from the follicles. These cases tend to a chronic condition.

Diagnosis in vulvitis should be free from any difficulty except that of differentiating the specific and non-specific forms.

The *treatment* in all cases may require to be antiphlogistic at first, necessitating low diet and cooling purgatives, and avoidance of every kind of stimulant. In the acute stage constant warm fomentation is required, and the common lead and opium, or borax and hydrocyanic acid lotions, are most serviceable. I have no experience of the heroic treatment by very strong solutions of nitrate of silver, painted on during this stage, and I do not think I dare try it. As the acute stage subsides, the applications must become more astringent. Sulphate of zinc (gr. iii.-x. ad ℥i.), sulphocarbonate and chloride of zinc in the same strength, but not stronger, and permanganate of potash solution gradually increased in strength from 1 or 2 grs. ad ℥i., according to the result, are among the most reliable of them, but others will be mentioned when speaking of vaginal inflammation. I prefer watery solutions to glycerols or more solid applications, but in the chronic granular or follicular form I have seen much benefit accrue from wiping the diseased surface carefully with cotton-wool, and then painting it with the tincture of iodine (B.P.). A few applications, at intervals of one or more days, according to the tenderness, will sometimes promote a rapid cure in cases that have been



FIG. 33.—Follicular Vulvitis (Thomas).

very tedious. Persulphate of iron (1 pt. to 8 of glycerine), and argent. nit. (gr. x. ad m. ℥i.) are used in the same way; I prefer the iodine. The larger projecting follicles may also be punctured with advantage.

Abscess.

I have already referred to the occasional production of abscess of the vulva by the extension to the connective tissue of the inflammation of vulvitis, gonorrhoeal or otherwise. Extension may likewise take place into the ducts of the numerous small glands which open on this surface. But abscess may also occur, and very frequently does, without previous affection of the mucous surface. A slight blow or contusion, or the septic effect of absorbed uterine or other discharges, may be the efficient causes. Not infrequently the abscess is apparently spontaneous, but in

such cases the blocking up of a glandule by its own secretion, the evulsion of a hair, or some such cause, is doubtless the precursor.



FIG 34. Labial Abscess (Thomas).

A common site is in one of the labia majora (fig. 34), sometimes in both, and the contents of these labial abscesses have often the peculiar factor observed also in facial abscess. The next most common site is in the duct of one of the two vulvo-vaginal glands (fig. 32, 9). These two small structures lie at the junction of the vulva and vagina; they are compressed backwards by the constrictor vaginae, but their ducts emerge in front of the hymen, hence it is the occluded and inflamed ducts which chiefly figure as vulvar abscess, while the glands themselves not infrequently give rise to vaginal cysts. Corresponding to Cowper's glands

in the male, they are sometimes named after him, also occasionally after Duverney or Morgagni, but most frequently after Bartholinus. This gland or its duct is also a frequent site of chronic abscess.

After a vulvar abscess has burst or been opened, and has apparently quite disappeared, it is apt to recur at a more or less distant period without apparent cause, and this recurrence may be so frequent as to be a source of great trouble and pain. When this is the case, the wall of the abscess is to be regarded as that of a suppurating cyst. True cystic growths may

have been originally present, or the wall of a dilated gland or duct, or, according to some, of a dilated vein, may constitute the affected surface. The nymphæ are more rarely the seat of abscess. I have recently treated a case where for over four years vulvar abscess constantly recurred, driving the patient out of an excellent situation as a school-mistress. Six months before I saw the case it was treated in vain by a seton. No abscess was present when I saw her, but the two surfaces of the right nymphæ, otherwise healthy-looking, could be pulled widely asunder by forceps, and on cutting through the inner one a white-walled cavity showed itself, quite empty, but capable of holding a large filbert. This cavity was laid open from end to end and compelled to granulate from the bottom, and the disease is now cured.

The treatment of vulvar abscess is that of abscess in general—warm fomentation and poultices at first, and free evacuation when pus is fairly made out. The labial form should always be opened on the mucous side, but the possibility of a hernia in this situation must not be forgotten on account of its infrequency. I have no experience of antiseptic aspiration in these abscesses. When recurrence takes place, the exact site of the abscess must be very carefully made out; it must be freely opened and stuffed with lint soaked in carbolic or eucalyptic oil, to compel granulation from the bottom. If it appears that there is a true cyst wall, which can be dragged or dissected out, this is to be done. If not, a small portion may be snipped away. Abscesses of the perineum is now and again met with, and should be opened early, in order to avoid fistulous communication.

Cysts.

True non-purulent cysts are not infrequently met with in the labia majora, and also as developments of the vulvo-vaginal gland or its ducts, and occasionally they attain a considerable size. Their pathology is often obscure, but there is reason to think that sometimes, instead of being the result of retained glandular secretion, they may be the sequel of small hæmorrhages into the cellular tissue or into a gland. True dermoid cysts, containing hair or teeth, have been found here, as elsewhere. The contents of ordinary vulvar cysts vary much, owing doubtless to their original etiology. Clear liquid, glairy fluid, sebaceous matter, altered blood, or sero-purulent fluid, are all occasionally encountered. In diagnosis, if confounded with chronic abscess, no harm can accrue, but the occasional presence of thrombus, varicocele, hydrocele, hernia, or fatty tumour of the labium, must each be kept in view. There is less danger of mistaking cysts of the vulvo-vaginal glands or ducts for any of these than there is in the case of cysts of the labia, unless the former are very

large, in which case they may assume a very similar shape and size. When diagnosed, they should be freely emptied, and a portion of the wall should be removed, while the cavity is filled with thin strips of lint soaked in glycerole of carbolic acid, or iodine (gr. x. ad 3i.), or medicated with iodoform.

Varicocele.

Varicocele of the labia is sufficiently common as a result of pregnancy but may occur even in the virgin. It would seem to be occasionally due to the same causes as in the male, but more often to an augmented vascularity during pregnancy, or in the presence of fibroid tumours or other pelvic growths, together with impediment to the return of blood from the same causes. The valveless condition of the left ovarian, like that of the left spermatic vein, may help to account for the greater frequency of varicocele on the left side. Besides the continual aching and discomfort to which it gives rise, this affection is not without danger, owing to the liability of the dilated veins to be ruptured by very slight traumatic causes, even straining at stool. This may cause thrombus, if rupture take place into the connective tissue, or dangerous and fatal pudenda hæmorrhage, if it be external.

The first point in treatment is to take off, if possible, all super-incum-



FIG. 35. Sims's Glass Vaginal Dilator

of pressing down the abdominal contents; or occasionally by raising a fibroid or ovarian tumour above the pelvic brim, as will be described



FIG. 36.—Barnes's Vaginal Dilator

The radical cure by subcutaneous ligature is not open, as in the case of the male, to the objection that it may destroy the vitality of

bent pressure, by attention to the bowels and bladder, by the use of an abdominal belt in pregnancy or in the case of large tumours, which belt should lift up instead when speaking of uterine fibroids. Some form of elastic local pressure to the whole labium suggests itself but I have never seen this satisfactorily achieved.

the testicles. If hæmorrhage should occur externally, firm pressure must be at once applied to the bleeding point, together with the use of perchloride of iron or other styptics; and this is much aided in the way of counter pressure by the introduction of one of Marion Sims's, or Barnes's vaginal dilators. If the cellular tissue is infiltrated, without external rupture, we have the condition known as

Thrombus.

Thrombus, or perhaps more correctly *hematoma*, or blood tumour, of the vulva, is most familiar to the accoucheur, but in the presence of varicocele or of a weak condition of the veins, a very small amount of injury, even coitus, may suffice to produce it independently of pregnancy. The resulting tumour is sudden in its origin, and may vary in size from that of an egg to a cocoanut; but the full size may be only gradually attained. If large, the swelling can also be felt *per vaginam*, encroaching on the outlet of the pelvis. The history of previous varicocele, or of traumatic causation, and the sudden origin and the absence of inflammation, seem to distinguish this from other soft swellings of this part, hernia excepted. To exclude that we must notice the absence of gurgling, impulse on coughing, or resonance on percussion, and carefully ascertain the possibility of reduction. If iced water be applied early, and the patient kept quiet, we may hope for an early arrest of the hæmorrhage and a gradual absorption of the clot. In non-puerperal cases, incision should rarely, if ever, be attempted; but if suppuration has undoubtedly occurred, it may become necessary, time having been given for nature to diminish the risk of septic absorption by throwing out a surrounding wall of lymph. When the necessity unfortunately arises, either in these or in obstetric cases, the clots must be scooped out as far as possible, and there is hardly any instance in surgery where more advantage is to be obtained from thorough antiseptic or aseptic treatment than in that of the cavity thus formed.

Hernia and Hydrocele

of the labium are only occasional occurrences, but their very rarity makes it the more incumbent on the practitioner to bear in mind the possibility of at least the former, when dealing with tumours of the part. The inguinal canal, or canal of Nuck, may remain so patent as to allow a hernial protrusion of bowel, omentum, or even ovary, to pass beside the remains of the round ligament into the labium, the analogue of the

scrotum. In no case, therefore, should a labial swelling be surgically interfered with until the operator is satisfied that there is no inguinal protrusion, or neck, and has tried the result of coughing. If the usual signs of hernia are found to be present, it can generally be easily reduced, and must then be retained by a properly fitting truss. If strangulation occur, the usual operation is required. It will be less complicated than on the male. Now and again, as just mentioned, the ovary has been met with as a hernia in the labium or inguinal canal, the reversed condition of undescended testicle. In Pott's celebrated case it was double. The sickening pain on pressure, and the solid spherical character of the mass, would point to the nature of the disease. If reduction were impossible, removal would be preferable to the risks of chronic or acute ovaritis with their constitutional effects.

Hydrocele in the same site, as a labial tumour, would appear to be more rare, but it is met with occasionally. Its diagnosis is of less importance than that of hernia, but one must ascertain by taxis, in all cases, whether a labial or inguinal cyst has a communication with the abdominal cavity, and the treatment of a non-communicating cyst, with clear contents, might be tried by iodine or carbolic acid injection, whether presumably of hydrocele origin or not.

Solid Labial Tumours.

The two forms of solid benign tumour most often met with in the labia, are the fatty and fibrous. Both of these have been from time to time encountered, though I have never seen an example of the latter. Either of them may attain a considerable size, even several pounds in weight, and they generally spring from the labia majora. Removal by the ecraseur or knife will be regulated by the size or pedunculation of the growth.

Hypertrophy.

Simple hypertrophy of the nymphæ, clitoris, or labia majora, occurs with tolerable frequency, sometimes as a result of vulvitis or other irritation, sometimes from causes quite obscure. The parts are most frequently affected as placed in order above. In elderly women especially, some hypertrophy of the nymphæ is very common, and calls for great care to prevent discomfort by friction. Frequent ablution, and the wearing of a strip of linen smeared with vaseline or spermaceti ointment between the affected parts, will generally suffice; but when discomfort is great, removal of the whole or a portion by the galvanic ecraseur is

desirable. The true *Elephantiasis* (fig. 37) is rare in England, though common in many hot climates. It differs from ordinary hypertrophy chiefly in the immense size which it attains, in its tendency to become nodulated, or even knobby, on the surface, through changes in the epidermis, in its pathological tendency to lymphatic dilatations, and in its great liability to recurrence. It is another of those affections which might be profitably studied in relation to the evolution of disease by climate, &c. All authorities are, I believe, agreed in recommending removal, in spite of the recurrent tendency. Any part of the pudenda may be affected, but the *labia majora* most commonly.



FIG. 37. Elephantiasis of the Vulva (Mayer).

That certain cases of hypertrophy are true tertiary syphilides there can be little doubt. The difficulty lies in their differentiation from others not of specific origin. I fear that for the present we can only depend on the history of the patient, and the result of anti-syphilitic remedies.

Vascular Caruncles and Degenerations.

What is known as a vascular tumour or caruncle is so commonly met with at the orifice of the urethra, that its consideration might have been delayed till a subsequent chapter. I believe, however, it will be most satisfactorily introduced here in connection with some other new growths of a similar character. Just within the urethra, and protruding somewhat from it, we frequently encounter a small crimson growth, in size from a lentil to a currant or even a cherry, exquisitely painful to touch, or on the passage of urine. It is soft, friable, and more or less pedunculated, the peduncle springing from the urethral wall at an eighth to a quarter of an inch from its extremity. Such is the typical *vascular*

urethral caruncle. If the patient's description of painful micturition has not led to a search for it, it is betrayed on the first attempt at a vaginal examination, use what care we may to avoid giving pain. But it assumes other and less common forms. It may not protrude beyond the urethra at all, or it may not have any pedicle, but may encircle the urethral canal with a red villous lining, requiring care to distinguish it from mere eversion of the mucous membrane. Or, it may appear quite outside the urethra as one or more crimson points; or, least common of all, it may assume any of these forms, and be almost void of pain and sensitiveness. An affection, practically the same in nature, may be met with elsewhere on the vulva.

These growths consist of fine loops of capillaries, with more or less, but generally little, connective tissue, and, as is clinically proved, a varying nerve supply. When they assume the typical form, the *treatment* is simple enough, especially with chloroform, and in the lithotomy position. Ascertaining by the gentlest use of a probe where the pedicle is, it is surrounded and cut through by a fine pair of scissors, curved on the flat. The tumour may be raised with forceps, but is very easily torn. It is generally recommended to apply a touch of nitric acid to the base in order to prevent recurrence; but recurrence will take place, nevertheless, in many instances, from the immediate neighbourhood. I prefer pure carbolic acid, which has more or less of an anodyne effect after the first few moments.

When occurring as small sessile growths outside the urethra, these must be freely removed in the same way, but they are generally a little firmer, and bear lifting up by forceps better, previous to ablation. The greatest difficulty is with those which surround the inside of the urethra with a collar of vascular tissue. I have met with several of these, have



FIG. 38.—Ear Scoop. Suitable for the removal of urethral fungosities.

tried various methods of treatment, and have come to the conclusion that the only satisfactory plan is, under chloroform, to freely scrape the urethra with a fine scoop or curette (fig. 38), such as is used by aurists, to apply carbolic acid to the denuded surface, and to keep the patient under the influence of morphia for several hours afterwards.

I have said that similar growths are to be found in other situations on the vulva, and the most common of these sites is around the margin of the pre-existing hymen. They may be considered as the remnants of that structure, but so altered as to resemble in colour, and often in pain-

fulness, the urethral growths. They have, however, nearly always a larger amount of connective tissue, and are known as *carunculae myrtiformes*. I shall have occasion to refer to them again as one of the most common causes of painful connection (Dyspareunia). There is but one remedy, free ablation.

Occasionally other parts of the vulva, especially the inside of the labia, are the seat of a degeneration of the same kind, but which may not rise above the surface at all. These have more the appearance of spots of red staining on the mucous surface. These also are for the most part, though not always, acutely painful. They are nearly always met with in elderly woman, and tend by their recurrence in different situations to make life very miserable. Strong escharotics such as nitric acid, or chromic acid, or Paquelin's thermo-cautery will eradicate them for a time.

Fissures.

Fissures of the vulva, similar to those of the anus, are not very infrequent. They may follow the first attempt at sexual intercourse, or be sequellæ of labour, or result from the presence of eczema or other affections of the skin and mucous membrane. Their treatment is by incision along their whole length, which must, of course, be accompanied by temporary cessation of the marital relation.

Adhesions.

In young children, the opposite surfaces of the labia, or, more rarely, of the nymphæ, are often found to be adherent. Such adhesions are usually slight, and are due to want of attention to cleanliness. They will give way to the handle of a knife, or to mere stretching with the fingers. If vulvitis has occurred, they may be somewhat firmer, and require a few slight touches of the knife. After tearing of the soft parts in severe labours, unless care is taken during recovery, firm cicatricial adhesions may occur. In all cases where such tearing is known to have taken place, a glass speculum, or one of Sims's glass dilators (fig. 35), should be occasionally passed very carefully, after the first week, as a preventive measure. Should permanent adhesion occur, sufficient to interfere with the natural functions, anesthesia must be induced and dilatation made with just as little nicking of the cicatricial bands as may be found necessary; and the ground thus gained must be kept up by the wearing of a dilator for a short time daily.

Abnormalities of the Hymen.

I think it best, for reasons which will afterwards be apparent, to mention these here, rather than with the other congenital malformations; but complete closure of the hymen, with its resulting retention of the menstrual secretion, will be considered along with the occlusions of the vagina or the uterus, which may produce similar results (see Chap. VI.). The hymen (fig. 32) varies much in form in different women; sometimes it constitutes a simple crescent at the back of the vaginal orifice, sometimes a complete circular curtain, and sometimes it is of irregular shape, or pierced with several openings. It may be so rudimentary as to be practically absent: or, owing to accidents in early life, or to vulvitis, it may be quite absent in women who are perfectly chaste. The medico-legal importance of this is self-evident. Not only are there these varieties in form, but there are equally great differences as to strength, thickness, vascularity, elasticity, and innervation. I believe that, in some cases, the hymen contains a fair amount of muscular tissue, and that it may contract painlessly and prevent connection. Only in this way can I explain one or two cases of the kind I have met with.

Undue toughness of the membrane may entirely prevent intromission, but it is quite a familiar fact that this is no absolute barrier to impregnation. I was recently consulted in the case of a young unmarried lady, who was found to be far advanced in pregnancy, although she had such a complete hymen, and such a painful, spasmodic condition of the parts, that a finger could not possibly be introduced without chloroform, and not easily with it. In all cases of this form of obstruction sufficiently marked to require medical advice, complete removal of every vestige of the hymen by scissors is advisable at once. Anæsthesia must, of course, be induced, and the patient must be placed in lithotomy position before a good light. The membrane is raised by forceps and carefully snipped away all round. If any portion is left, it is very liable to become the seat of painful caruncle, to require further operation, or to occasion much unnecessary suffering. The hæmorrhage is generally slight, but can be easily controlled, when necessary, by a solid conical plug, held *in situ* by a firm T bandage. A piece of box-wood, or the nozzle of a syringe of the requisite conical shape, should always be used if the patient has not a good nurse, or cannot be seen easily, in case of secondary bleeding. After this or any other operation of the kind, the patient should wear a plug for a short time every day for some weeks, which may consist of three or four inches of the largest rectum bougie held *in situ* by tapes attached to the waist, or of the special instruments introduced for the purpose by Marion Sims or Barnes (figs 35 and 36), and to be had of various sizes.

Coccygodynia.

This name, now in common use, was given by Sir J. Y. Simpson to a painful condition of the parts in the neighbourhood of the coccyx, characterised chiefly by severe anguish on bringing into play any of the muscles which have their insertion herabouts. Sitting down, or, more especially rising up, but also walking, defæcation, coitus, and the like actions, are thus attended by pain, but not equally in all cases. In some one action, in others another, in a few all, are thus painful; and occasionally, though rarely, there is continuous pain independent of motion. The pain of anal fissure or hæmorrhoids can be easily differentiated and traced to its source, but symptoms undoubtedly occur corresponding closely to those of the so-called coccygodynia, and met with in a few instances of pelvic cellulitis about the utero-sacral ligaments. The name, like so many other attempts at precise nomenclature, has, I think, done harm, having induced some to treat the affection as an entity, to look for *the* cause, and to seek for *the* treatment. "Painful sitting" has been suggested by Duncan, but he includes the pain which is felt in the groins and elsewhere on sitting down during the occurrence of peri-uterine inflammation.

The symptoms of coccygodynia often follow upon a hard labour; they occur also in the course of various uterine diseases, but some of the worst and most persistent cases are encountered in the unmarried and otherwise healthy. This fact, as well as the variety in the movements which, in different cases, give rise to pain about the coccyx, suggests the existence of more than one disease, differing perhaps completely in nature, but linked by the common symptom. Success in treatment will depend on the differentiation of the causes at work. The coccyx and lower end of the sacrum must always be carefully examined *per rectum*, in combination with external manipulation of the back; the state of the uterus and pelvic viscera must be methodically investigated, and the history of previous labours must be inquired into. The origin is generally traumatic and the result of delivery, though not always. Prolonged horse exercise has given rise to the affection (Seanzoni), also the effect of cold.

In one case there is a simple neuralgia, to be treated by anodyne suppositories, morphia subcutaneous injections, and anti-neurotic regimen or medicine; by quinine, iron, arsenic, colchicum, or iodide of potassium. In others there appears to be hyperæsthesia, and perhaps engorgement, of the glandula coccygea of Luschka, seated at the tip of the coccyx; in others there is undoubted affection of the coccygeal periosteum, and in these two latter forms a sweep of the subcutaneous tenotomy knife round the sides and tip of the coccyx may afford imme-

diate relief, by taking off muscular traction or separating nerve connection, and this relief may or may not be permanent. Inflammation of the sacro-coccygeal joint is relieved by the same procedure combined with leeching. Necrosis of the coccyx requires resection of that bone, and fracture with mal-union must be re-broken, and kept from uniting at a sharp angle by the frequent introduction of the finger into the rectum. Uterine or pelvic disease, if suspected as a cause of reflex pain, must be treated *secundum artem*. I once cured immediately an obstinate case by one application of strong carbolic acid to an abraded cervix uteri. In short, coccygodynia is no more a special affection, to be treated in one way, than would be the case with dactylodynia, if medicine had conferred on our finger ends a uniform title for all their aches and pains.

Ruptured Perineum.

The perineum may be ruptured in various ways,—by falls, cutting instruments, pitch-forks, and the like,—but practically the gynaecologist has only to do with that form which is due to the effects of labour. It may, I think, be said with truth that most cases of badly-torn perineum are due to faulty management—to neglect of the axis of the sacro-perineal curve while guiding the head round the arch of the pubes, to the wrongful administration of ergot, to the neglect of anaesthetics or other means of delaying expulsion while the soft parts are being slowly prepared, or to graver errors in practice. But it must, on the other hand, be said with equal certainty, that the accident may happen in spite of all the care the most skilful practitioner can bestow. A narrow pubic arch which compels the head backwards, or a straight oscerum, or some condition of the perineal tissue which renders it abnormally feeble, are not the fault of the obstetrician. Avoiding the support of the perineum in the old-fashioned manner, *i.e.*, avoiding all such pressure on it as, with the counter-pressure of the head, must destroy its vitality,—careful perineal support in the modern sense, *i.e.*, guiding the occiput around the pubic arch with the tips of the fingers, repressing it if progress seems too rapid, while affording only a sense of comfortable support to the perineum itself—preventing any tendency of the anterior vaginal wall or cervix uteri to precede the head—using plenty of lubricants—administering anaesthetics in all cases of great rigidity, spasmodic or vital—avoiding ergot—using the forceps before the tissues are disorganised, and using it at the outlet slowly, and as a guide rather than a tractor, these are the surest means of prevention. Nature indicates another precaution: as the head is passing the perineum the pain usually causes the patient to cry out loudly, and, by not discouraging the

relaxation of the abdominal muscles thus produced, we may relieve the perineum. But there are cases when the uterus suddenly takes on violent continuous action, as if from ergot, expelling the head without due adaptation, and others, when the perineum is so muscularly resisting, or so soft and *cluey*, that it will not dilate, in which rupture is inevitable. There is tenfold more danger in such cases than in the enormous but slow and equable distention sometimes met with, and which can be combated by the measures just referred to.

Few obstetricians are now agreed as to the advisability of immediately operating on all cases of rupture of any extent, whether the rectum is involved or not. In a very few cases of undoubtedly contracted pubic arch or other pelvic deformity, if the sphincter ani is entire, there is less danger in allowing the fissure to remain than in closing it, only to be perhaps more deeply torn on the next occasion. No doubt a certain number of cases do well, if the limbs are kept close together and great cleanliness is observed; but I am sure they are exceptions, as far as union is concerned, although I have known more than one case where deep recto-vaginal tears have thus spontaneously healed. Moreover, these cases of ruptured perineum are the most fruitful sources of puerperal septicæmia. Their torn surfaces absorb that *contagium vivum* which, once admitted to the system, cannot be washed away like the stinking fluids of decomposing placenta or clots in the uterus or vagina. If the wound be well closed by metallic sutures, and well saturated with antiseptic glycerine, this danger is immensely lessened. All attempts to operate after the first few hours, when the wound is fresh, until the parts have shrunk and become covered with mucous membrane, that is to say, for many weeks, are generally fruitless.

When the rupture is allowed to remain, there are always more or less serious results. If the recto-vaginal septum is torn through, the life of the patient is rendered perfectly miserable by the escape of feces, or perhaps only of flatus, or very watery fæces. But even if the sphincter ani remain serviceable, the absence of the muscular perineum is of serious consequence. True it is that it in no way directly supports the uterus, and that when that organ has, from other causes, so far descended as to press upon it, it is of little avail to prevent external protrusion, but the absence of perineal support allows the vaginal wall to bulge out both anteriorly and posteriorly, when distended by the bladder or rectum. This state of matters, a great discomfort in itself, tends to grow worse and worse, and ultimately involves the descent of the uterus. Much attention has of late years been paid to improving the various operations for the repair of the perineum. It forms no part of such a work as this to attempt a criticism of these operations, and even to endeavour, in the space at our disposal, to recapitulate all the improvements, more or less

valuable, that have been proposed, would only tend to the confusion of the reader, if not of the writer. It seems, therefore, better to describe such proceedings as have commended themselves to me as an obstetric physician by their simplicity, facility of execution, and proved success, referring those who desire to study the surgical details more minutely to suitable sources of information. The operations required are either primary or secondary, and will vary in extent according to whether it is merely the triangular perineal body that is torn, or whether the recto-vaginal septum is also involved.

The primary operation leaves little or no time for much study or consideration; it is a general practitioner's operation, the steps of which should be familiar to all, and the means for its performance should never be far to seek. A suitable needle or needles, and suitable material for ligatures are the sole necessities, and these add little to the weight or bulk of the obstetric bag. For ligatures there is nothing



FIG. 39.—Wall's Needle-holder

equal to silver wire, and a yard or two of this should be cut into pieces of nearly a foot in length. No. 24 possesses the best thickness and strength, combined with flexibility. Silk, hemp, or gut are all occasionally employed, and it is a great advantage to have a few gut ligatures in addition to the wire. As regards needles, the majority of writers prefer a long curved one fixed in a handle, with the eye set in



FIG. 40.—American Needle-holder.

the point, and of course a variety of curves, though not essential, is an advantage. These needles should never have cutting edges. For silk ligatures, some such curved needles are absolutely required, as they are used to carry them around one side of the tear, and, after bending over its vaginal edges, outwards around the other side. Many prefer to use

well-tempered, curved, sewing needles of various sizes, which are guided first through one side and then through the other by needle-holders. Several such needle-holders are in use, such as Wells's (fig. 39), or one usually known here as the American holder (fig. 40), but the



FIG. 41.—Hagedorn's Needle-holder and Needle.

most handy that I have seen is that of Hagedorn of Magdeburg (fig. 41), introduced into this country by Krohne and Sesemann. It acts much more easily and simply than would be supposed at a first glance, and the flat needles supplied with it are so made as to completely resist fracture of their eyes when thus seized, a very frequent accident with most others. If, however, silver wire be used, the operation is greatly simplified by the use of a long, straight, round needle, in a good firm



FIG. 42.—Straight Perineal Needle recommended by the author. (4)

handle, with a large well-bevelled eye near its point (fig. 42). This and its suture wires will be found amply sufficient for the performance of the primary operation, unless in the case of great tearing of the septum. It is much more satisfactory to place the patient on her back than to be satisfied with the left lateral position, and she must be brought to the edge of the bed in as good a light as possible. Anæsthesia may be used if she is very excitable, and if the uterus is well contracted, but owing to numbness of the parts, caused by the previous perineal stretching, there is usually less pain from the operation than might be expected. A good nurse will contrive to hold up and separate both knees, while the nates and feet rest on the edge of the bed, but a second assistant is very serviceable, or the hand and foot of the same side may be tied together. The operator, however, must depend on himself for all else but retaining the patient in this position. The whole torn surface is first wiped as clean as possible, and any extensive bleeding is arrested by pressure or the application of a little carbolic spirit. A piece of clean sponge or

linen is then pushed into the vagina, past the tear, so as to keep back the lochial discharge. This must be removed after the sutures are placed, and before they are tightened. All this, like every other obstetric proceeding, should be rendered antiseptic by the free use of carbolic solution. The left forefinger of the operator is now placed within the vagina, ready to receive and guide the point of the needle. This is inserted on either side first, without wire, fully half an inch external to the torn surface of skin and a little behind its posterior end, and is pushed through the intervening muscular tissues to the extreme posterior end of the wound in the mucous wall. A good amount of muscular tissue is thus included between the rent and the track of the



FIG. 43.—Introduction of First Suture, with Straight Needle, in immediate Perineorrhaphy.

needle, and this is much better done by a straight than by a curved one. The point should emerge as nearly as possible exactly at the torn edge of the mucous membrane. If much of this is included, it will form, by its inversion, when the ligature is tied, an impediment to union, and if it be not caught at all, a raw surface will remain above the suture, a possible source of septicæmia. The eyelet of the needle, guided and guarded by the left finger, is pushed fairly through into the vagina, and threaded there with one of the sections of wire. If the needle is properly made, and the wire is of due thickness, this is easily accomplished, either by sight, or by touch alone if the patient is stout or muscular. Bending back an inch of the wire, the needle is withdrawn, and so draws

down the suture on one side. Precisely the same thing is now done on the opposite side, the needle withdrawing, in its track from the vagina, the other end of the wire (fig. 43). Two, three, or four other sutures are similarly passed in front of this, at equal distances, the foremost being close to the apex of the perineum. The vaginal plug is then withdrawn and the wound again carefully sponged with carbolic solution, cold at this stage, until all bleeding ceases. The stitches must now be tightened, and one pair after another gradually drawn until a finger in the vagina assures us that there is an even surface on the mucous side of the wound. Simple twisting of the opposite wires is all that is necessary, and shot or other clamps are, in the primary operation at any rate, a needless complication.



FIG. 44. Quilled Suture of Perineum (Haker Brown).

tion. The line must be drawn at that amount of tightness which ensures very slight traction on the whole wire, allowing for some subsequent swelling of the parts and easy adaptation of the torn surfaces, without forcible squeezing of the intervening parts. The wires must be taut, not tight. The twisted ends are cut off a full half inch from the surface and laid flatly on the sides of the wound. If care has been taken, an interrupted suture or two of gut, at gaping points, should be unnecessary.

The after-treatment should consist of catheterism, careful antiseptic ablution, light nourishing food, and the other steps afterwards more fully described when speaking of the management of vaginal or

uterine operations in general (Chap. III.). The stitches may be allowed to remain for about eight days. The patient should lie mostly on her side, right and left alternately. Post-puerperal exigencies may occasionally require us to depart from the usual dietetic rules. The question of locking up the bowels for a considerable time, after this and other operations on the perineum, is a difficult one. The immediate advantage of doing so is self-apparent, but the subsequent risk from the passage of large hardened masses, which forcibly distend the recently united structures, must have also occurred to every operator. On the whole, I am inclined to agree with my colleague, Dr Cullingworth (*see* paper in *Medical Chronicle*, November 1884), that it is advisable to leave matters very much in the hands of nature.

In venturing to propose this as the simplest and most satisfactory method of operating primarily on the torn perineum, I am aware that many still prefer the double or quilled suture, introduced by curved needles, and fastened at either side over pieces of quill, catheter, or ivory. This (fig 44) is familiar as "Baker Brown's" method. The single wire is more simple, and quite as effective, and much havoc may be played with the soft parts, in stout patients, by forcing needles, often with sharp edges, around the necessarily large and sweeping curve.

If the tear has completely divided the perineum and gone through the sphincter ani, the operation just described will yet suffice, unless the recto-vaginal septum is very much affected. The perineal structures being restored to their natural position, and firmly held there by the sutures, the torn septum is thereby placed with its edges in juxtaposition. But it is often desirable in such cases to apply one or more sutures to the septum itself, though, if the rupture be very great, subsequent proceedings will probably be required. The best material for these sutures is gut, which may, after insertion, be left to take care of itself. One straight needle, or much better, a small curved one held in a needle-holder, is armed with a gut ligature, and thus passed into the vagina, before anything is done to the perineum. A finger of the left hand in the rectum is the guide, and the sense of touch must often replace that of sight. One or more sutures are thus passed through the opposite edges of the torn septum, including only a small portion of its substance, and their ends are tied and cut short within the vagina. The perineal operation is then performed. The more elaborate proceedings recommended for the secondary operation are almost always impossible in primary cases, and I suspect that some of our eminent surgeons, who recommend and practice these, have had little or no experience of the lying-in room, especially among those classes which, in England at any rate, seem to furnish the great majority of such cases.

The *secondary operation* is, in one sense, little different from the primary. It aims at precisely the same object, viz., the bringing together of the opposite raw surfaces by suture; but it requires to have its raw surfaces made afresh, and it is conducted under very different and more favourable surroundings. A choice of time, and a choice of operator are open. There is no excuse for the want of sufficient light, or of assistance, or of anything else that is requisite to ensure success. As in the case of the primary operation, it may be necessary to repair only the perineal substance, or the torn recto-vaginal septum also. The operator, under the conditions of the secondary operation, has another great advantage; he may, if he think it advisable, as he often will, repair the torn recto-vaginal septum first, and at a subsequent operation proceed to the repair of the perineum.

At least four assistants are necessary, or at any rate useful, to perform these operations with certainty and comfort. One of these takes care of the anæsthetic, and two support the legs of the patient. To do this satisfactorily, she is placed in lithotomy position, the hand and foot of the same side being tied together. One assistant stands on each side, facing the operator, and with one arm keeps the knee of the patient well abducted, while with the other hands they hold open the labia, taking care to keep them exactly in the same position on each side, and making no irregular traction in any direction. Small spatulæ are more convenient for this purpose than the fingers. The fourth assistant is prepared to assist the operator with sponges, &c., and must be careful in



FIG. 45.—Sims's Sponge-holder.



FIG. 46. Emmet's Knife-holder

doing so not to obstruct the light. To avoid this the sponges should be small and held by forceps or special holders (fig. 45). The recto-vaginal septum, if torn, is first attacked, and, as has been stated, this may often suffice for one operation, where the rent is severe. The opposite edges are to be freshened down to the sphincter, the operator seizing first one and then the other with a fine hook or forceps, and carefully cutting it away. The strips should be removed from the vaginal, rather than from the rectal wall. For this purpose either a fine long-handled bistoury may be used, or one capable of being set at any angle to its handle (fig. 46), as introduced by Sims for operations on the cervix uteri; but the majority

of operators will succeed best by using scissors, curved or straight, as may seem most convenient (fig. 47). Those who practise surgery of this kind to any extent will find it necessary to have several pairs curved in various ways. Only a thin strip is required, and its removal is a very delicate process. As far as possible it is well to remove the whole of one side in one strip, and no islets must be left behind. To ensure the



FIG. 47. — Bozemann's Scissors.

apposition of raw edges at the upper angle, it is well to lengthen the tear with the scissors for an eighth of an inch or thereabouts. The septum operated upon is so thin that its certainty of adhesion is increased by very carefully separating its two layers, or splitting it to a slight extent, and this, quite independently of any relation to modifi-



FIG. 48. Laterally Curved Needle, for Estabé, &c

cations where the slitting is made more thorough, and the vaginal and rectal portions treated separately. Sutures have now to be applied — gut when the perineal operation is performed at the same time, silver when it is not. A finer wire is advisable than that used for the thick perineal body. The needle for this purpose must curve laterally in relation to



FIG. 49. Tyler Smith's Tubular Needle.

its holder, whether that be free or attached (fig. 48); all forms of tubular instrument (fig. 49) are apt to get out of order, and the handled needles are seldom sufficiently round and free from cutting edges. About five sutures are required to the inch; those of gut are tied in the same end

cut short; those of silver are twisted, and cut off a full half-inch from the mucous membrane, and the stumps are bent over to the right and left sides alternately, to facilitate removal.

For the repair of the perineum, a freshening process is required on a larger scale than would at first suggest itself. Two raw surfaces are required, to represent, as nearly as possible, the torn perineal sides, and as the parts have now shrunk, the freshening must extend somewhat into the buttock and vagina, and beyond the new, glazed mucous membrane. We form therefore such a raw surface as represented at fig. 50. The dissection should commence behind, and should first outline the posterior border of the new perineum, then gradually working forwards, a layer of the requisite size and shape is dissected off on either side. If the dissection were commenced in front, the blood, trick-



FIG. 50. - Perineum Freshened with Sutures introduced.

ling backwards, would greatly obscure the subsequent progress. I have seen the proposed outlines of the dissection previously mapped out with a pencil of nitrate of silver, but it is better to depend on one's observation at the time of operation. The two sides must, however, be vivified as nearly alike as is possible. Many, if not most, operators prefer to denude the proposed surface by snipping with fine scissors rather than by the knife. All bleeding must be stopped by pressure and torsion of the most vascular points; and continuous oozing, by cold, or by a fine stream of hot water, or by the use of spirit of wine.

A totally different plan of revivifying was proposed by Dr Jenks of Chicago in the *American Journal of Obstetrics* for April 1879, p. 262, and has been tried with success by Emmet, Albert Smith, and others.

He first makes a small incision with fine scissors, about the centre of the lower border of the proposed raw surface. Through this both blades are insinuated, below and parallel to the mucous surface, and its separation is now performed subcutaneously by repeated snippings. Discoloration of the surface clearly marks the route the scissors have taken, but there is no external hæmorrhage, except a few drops from the opening, and the process is rapid. When the whole required surface is thus separated from its attachments, and clearly indicated to the eye, the flaps are cut away on each side by scissors, with perfect regularity of outline, and there is no necessity for searching for islets of mucous tissue not separated. I look upon this plan as a most valuable contribution to gynecological surgery, and it can be made equally available for those modifications of the operation, where the flaps of mucous membrane are, instead of being cut away, utilized, by their apposition, to increase the strength and thickness of the perineum. A probe pointed tenotomy knife can be introduced, and used in the same way as the scissors, but is more likely to give rise to some troublesome hæmorrhage afterwards.

When the freshening is completed by the removal of the necessary surface, and oozing has ceased, the sides are brought together precisely as in the primary operation. The straight needle and silver wire will in most cases suffice equally well in the secondary operation, if care be taken to place the posterior stitch quite up to the posterior angle of the wound in the vaginal mucous wall. If there is still a small portion of ununited recto-vaginal septum, which has, however, been well freshened, many authorities recommend the use of one posterior stitch, which would certainly require a long and well-curved needle for its insertion. The course of this stitch is as follows:—Entering on one side, half an inch at least external to the lower margin of the anus, it passes, guided by a finger in the rectum, through the muscular tissues, into the cellular tissue between rectum and vagina, round and above the upper edge of the rent, without emerging, and so downwards on the opposite side. This stitch, if used at all, must be inserted before those in the perineum, and it must be clamped at each extremity, rather than tied, so as not to occlude the anus.

The proceeding now given is the one which seems to me to be, on the whole, most capable of yielding good success, in the hands of an operator endowed with a fair ordinary amount of skill. But there are very many modifications, some of which are, I believe, improvements, especially in the hands of the dexterous surgeons by whom they are introduced; others are, I am sure, unnecessary complications. In Baker Brown's *Surgical Diseases of Women*, 1866, the student will find the basis of these operations most carefully laid, the

improvements which have since been chiefly of advantage being the introduction of silver wire for ligatures, and the abandonment of the double or quilled suture. A great number of the proposed alterations have also for their object to avoid the removal of any part of the tissues, and instead of entirely removing the dissected flaps, to utilise them for the purpose of closing the rent and rendering its adhesion stronger. This is accomplished by turning them upwards into the vagina and uniting their raw surfaces. The coxcomb-like projection thus formed soon shrinks. In Emmet's *Principles and Practice of Gynecology*, (1880), the student will find much recent information on perineorrhaphy as on all surgical questions in gynecology. In Schröder (*Ziesssen's Cyclopaedia*, vol. x.) he will find a short description of Laugenbeck's and Simon's methods. Lawson Tait's ingenious procedure for utilising the flaps (*Obstetrical Journal*, vol. vii.) I have known produce excellent results, but it is not every tyro who will clearly understand it, unless he sees it actually performed. Bantock (*Rupture of Female Perineum*, 1878) conveys much useful information, and Goodell (*Lessons in Gynecology*, 1880), in his racy manner, gives much sound practical advice on the subject of perineal repair. No one would, I suppose, undertake the management of a delicate case of this kind without carefully studying one or more such authorities.

It is characteristic, however, of the fluctuating condition of much of gynecological surgery, to find Emmet recently stating (I quote only from an abstract in the *American Journal of Obstetrics*, vol. xvi. 1883, p. 1080), that "a simple laceration of the perineum, extending even to the fibres of the sphincter ani, produces no inconvenience after the parts once have healed." Until the inutility of operations for the cure of illa, believed to be due to this cause, is further proved, and the necessity for other or additional operations on the posterior vaginal wall is a little further worked out, I must consider this matter as at least *sub judice*. I am, however, certain of this, that although the pelvic fascia, which is perforated by the vagina and urethra, may be probably shown to furnish the chief outward support for the pelvic viscera, rather than the perineal body, and although it may be the case that this fascia can only be restored to action by paring and stitching together some portion of the posterior vaginal wall, higher than any perineal tear, still the absence of the perineal body does, by itself, promote vaginal prolapse, usually followed by uterine descent. We shall therefore remain indebted to Emmet and others for the care they have bestowed in perfecting its repair.

CHAPTER III.

METHODS AND MEANS COMMONLY EMPLOYED IN SURGICAL TREATMENT. Instruments used in Local Treatment. Methods of Introducing Remedial Substances. GENERAL MANAGEMENT OF GYNÆCOLOGICAL OPERATIONS. Preparation. Antiseptics. After-Treatment. ANÆSTHESIA.

IN speaking of the after treatment of the operations for torn perineum, at the close of the last chapter, I referred to the present for some further details. It would seem that a good deal of unnecessary repetition may be avoided, if, in this section, I introduce a few somewhat discursive remarks on several of the means and methods employed in the surgical treatment of female diseases. Many means of the kind are only applicable to a small number of cases, and only intelligible when these are under consideration. Others have a more general application, and these I propose to mention here.

Certain Instruments used in Treatment.

1. *Aspirators*.—Both for diagnosis and treatment, an aspirator, in some form, is very commonly required. For the former purpose it may be necessary to remove only an exceedingly small quantity of fluid for examination, or perhaps merely to ascertain whether there is any fluid to remove; and in such cases the ordinary subcutaneous injection syringe will suffice. If full antiseptic precautions are employed, the use of this may be said to be quite free from danger. In order to reach cysts situated high in the pelvis, or in the abdomen, a much longer tubular needle may be employed, furnished with a stop-cock (fig. 51). I prefer to call this form of aspiration "exploration." In the case of very small cysts, those of the labia or vagina, for instance, even when complete emptying is required, this means may also suffice; but a larger and more complicated instrument is generally necessary, the essentials of which are a good sized receiver, a strong, well fitting exhausting syringe, trocars of various sizes, or needles into which the cutting point can be withdrawn, and a connecting flexible tube, with one or more stop-cocks. The instrument of Rasmussen (fig. 52) fulfils these conditions, though there are several others of more elaborate make. For the diagnosis of

the contents of ovarian tumours from ascitic fluids, or from the fluid of parovarian, renal, hepatic, mesenteric, or other cysts, the aspirator is frequently necessary. Cystic, or apparently cystic, tumours in the pelvis, containing blood, pus, serum, or ovarian or other fluids, may thus be diagnosed, but puncturing of these by any but the very finest needles is very gravely to be deprecated, unless the surgeon is prepared to act at once upon the knowledge thus obtained. The fluid of an extra-uterine foetation may also be removed by a fine aspirator, with a view to arresting the growth of the foetus.

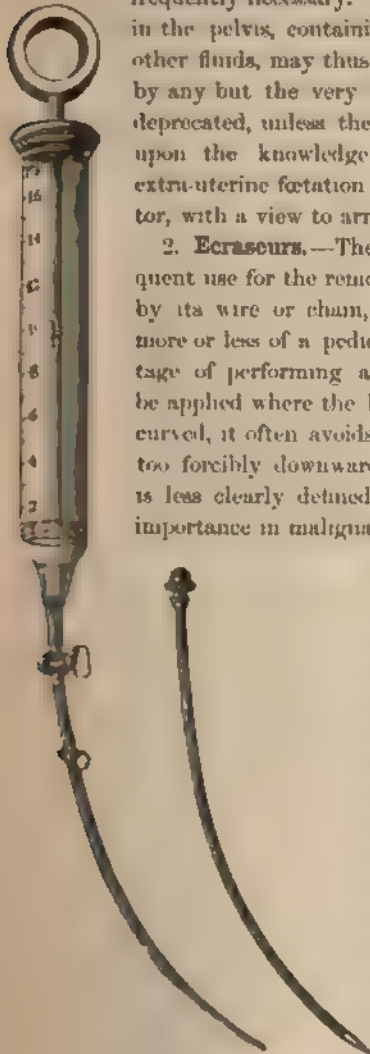


FIG. 51. Aspirator Needle.

2. **Ecraseurs.**—The *ecraseur* is another instrument in frequent use for the removal of tumours which can be encircled by its wire or chain, especially those growths which have more or less of a pedicle of attachment. It has the advantage of performing a bloodless amputation; it can often be applied where the knife or scissors cannot reach, and, if curved, it often avoids the necessity of dragging the parts too forcibly downwards. On the other hand, its incision is less clearly defined than that of the knife, a matter of importance in malignant disease, and if there be not a well-

defined pedicle, it may, as it were, scalp the included growth rather than cut clearly through its attachment. In some cases this can be avoided by first transfixing the mass with a needle just outside the bite of the wire or chain (fig. 53). The following are the chief forms:—The chain-*ecraseur* of Chassaignac (fig. 54) and its modifications; the wire or wire-rope *ecraseur* (fig. 55), which may also be curved in its shank; and the galvanic *ecraseur*. A smaller form of wire *ecraseur* is used by Emmet as a tourniquet to constrict the cervix uteri, and so arrest hæmorrhage during the performance of operations on that organ. Growths of the vulva or

vagina, the cervix uteri itself, polypi or polypoid fibroids of the uterus, whether intra- or extra-uterine, are very frequently removed by the *ecraseur*. The pedicle in ovariectomy is also occasionally divided in this way.

The chain *ecraseur* has undoubtedly very great power, and is therefore applicable for the amputation of large or solid growths, when it can

be made to encircle them. When they are high up in the uterus this is, however, often very difficult, owing to the too great flexibility of the chain. Marion Sims had an ingenious apparatus for keeping the chain loop open, and guiding it over a bulbous polypus, but in really difficult cases I have not been able to succeed with it, and the same experience has occurred to others. A whip-cord may be passed round by means of such an instrument as Belocq's, used for plugging the posterior nares, or by the old fashioned Gooch's cannula, or by two gum-elastic male catheters, through each of which the ligature is passed, uniting them loosely at their further extremities, and by this cord the chain may be drawn round the pedicle or base. Even then it may be very difficult afterwards to fix the chain properly so that the ecraseur will work. The wire instruments are rather more simply constructed, and the wires used vary. The best of all is a well-annealed steel wire, which may be had of any strength, and of very great pliability at the same time, and there are few intra-uterine growths over which it cannot be manœuvred.

The wires of many strands are useless for very resisting growths, but Messrs Newall & Co., of 130 Strand, London, manufacture a rope for telegraphic purposes, which was first favourably mentioned by Mr Barwell at the London Clinical Society. It is very strong and very flexible, superior to the

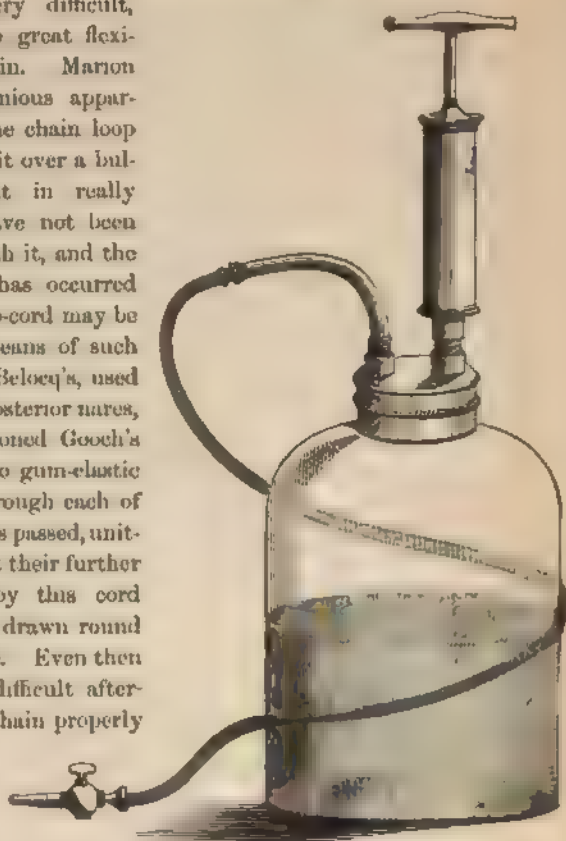


FIG. 52.—Rasmussen's Aspirator.



FIG. 53.—Growth transfixed by Needle, to secure the hold of the Ecraseur.

single wire in flexibility, but slightly inferior in strength. The galvanic



FIG. 54.—Chassaignac's Chain Ecraseur.



FIG. 55.—Braxton Hicks's Wire Ecraseur.

ecraseur (fig. 56), when its platinum wire is heated sufficiently, cuts through as cleanly as a knife. The wire should, while cold, be tightened just sufficiently to hold firmly, and the screw must afterwards be used very slowly, so that it may burn, not tear through. The least over-tension will break it. It is very important to ascertain before operating that the number of cells is sufficient to heat the thickness of platinum wire used, and it should be remembered that the heat required is much greater when the wire is surrounded by moist tissues, than when free in the air. The galvanic ecraseur is admirably adapted for growths of the vulva or cervix. It cannot be retained in its place by a vulsellum or metal needle, as the electric current is thus wrongly directed, but a bone needle may be used for the purpose.



FIG. 56. Galvanic Ecraseur.

has been, very dangerously abused. Recamier's instrument, introduced in 1850, with a small steel loop, with a very decidedly sharp scraping

3. **Galvanic or Thermal Cauteries** are of service in many other forms beside that of the ecraseur. Whenever any growth can be destroyed by the action of heat, and when there are great or insuperable difficulties in getting beyond it, the variously shaped instruments which are attached to Paquelin's thermo-cautery (fig. 57), or which may be adapted to the galvanic battery, may be used for this purpose, and especially the white heated blunt knife can be used bloodlessly and safely on redundancies of the external genitals, or for opening cysts or abscesses. Till Faure's or other accumulators of electricity are placed more freely at the disposal of the profession, Paquelin's instrument will be found most useful. I have not attempted to describe the detailed action of either it or the galvano-ecraseur. A few minutes' inspection will be more serviceable than any instruction in their absence.

4. **Curettes.** The curette is an instrument of comparatively recent introduction, of undoubted service, but capable of being, as it

edge, attached to a stiff handle. Since then it has been advantageously modified by Thomas and others (fig. 58), becoming merely a blunt, though not very thick, wire loop, with a handle which is capable of being slightly bent, while the loop is rigid. Simon uses a cup shaped scoop of steel, of various shapes and sizes. For diagnostic purposes, the curette, introduced through the naturally or artificially dilated cervix, may be employed to scrape small portions from any sufficiently soft intra-uterine growth, for microscopic examination, and it has been freely used by S. Moricke in his investigations of the menstrual mucous membrane. For the removal of chronic intra-uterine, inflammatory granulations, it is also as safe and effectual, in thoroughly practised hands, and none else should use it, as the more powerful caustic fluids, and it is a valuable addition to our means of treating retained and adherent products of abortion. For



FIG. 57. Paquelin's Cautery.



FIG. 58. Sims's Curette.

the removal of intra-uterine malignant growths it is also available, although, as it is impossible to hope for cure in this way, it should only be used in the presence of continued wasting discharge, which we hope for a time to alleviate, and there is always some danger of the portions of diseased tissue thus loosened adding to the rapidity of secondary systemic infiltration. Volkmann's spoon may also occasionally be turned to account in uterine practice.

5. Scarificators. Depletion of the cervix uteri is sometimes of undoubted advantage. For this purpose, leeches used to be freely employed, but their application is exceedingly troublesome, and many accidents have followed in its wake—dangerous hæmorrhages, septicæmia, hysterical complications, and escape of the animal into the uterus. Their application is unsuited, for different reasons, to the practitioner or to the ordinary nurse. Some form of scarification is now, therefore, always preferred, though leeches are still occasionally applied to the perineum, for general engorgement of the pelvic viscera. It matters little whether the scarificator is round, spear, or otherwise shaped; any cutting instrument, with a handle long enough to permit of its use with the speculum,

will suffice (fig. 59). Several radiating cuts are made, about an eighth of an inch deep, which will bleed freely, though seldom profusely. In acute inflammation of the uterus, or its neighbouring parts, scarification of the

cervix often gives considerable relief. Among chronic affections, the chief indications are dysmenorrhœa, prior to acute exacerbations, when these can be reasonably foretold, the occasional sub-acute engorgement of fibroid growths or chronic enlargements of the uterus, suppressed menstruation with great pelvic fulness, and chronic cervical endometritis with follicular projections from the cervix, in which case as many as possible of these follicles should be punctured. I have no experience of scarifying the interior of the uterus except by curette. The pain of scarification, except under conditions of acute inflammation, is only trivial, but the operation should never be performed except at home and in bed. One can never be quite sure of not meeting with a special hemorrhagic tendency, or wounding a varicose vein of the cervix.

Incision of the cervix uteri, for the purpose of enlarging its canal, will be spoken of under the headings of Dysmenorrhœa, Uterine Flexions, Fibroid Tumours, &c. Dilatation of the same part by various artificial means, for diagnostic or therapeutic purposes, will also be then discussed.

6. Sutures and Ligatures—So many gynecological procedures, slight and of every-day occurrence, or severe and within the range of the specialist alone, involve the bringing together of torn or artificially freshened parts, that it will be well to say a few words on the subject of ligatures and sutures, their material, and mode of introduction and removal. As regards *material*, our choice is practically threefold—metal, silk, or gut.

Metal Sutures are, for the great majority of purposes, the best, wherever they cannot be left for absorption or other disposal by nature alone, without removal. They can be made, and are in their nature absolutely a-septic. They can be retained with impunity for a very long time.

They are, if of right material, as flexible and as strong as can possibly be desired. An era in gynecological surgery commenced when the best form of metal sutures was introduced by Marion Sims, and no kind of metallic suture equals pure, or nearly pure, silver. Galvanised iron wire has some advantages, chiefly on the score of expense; but the



FIG. 59. Palfrey's
Scarificator.

requisite degrees of strength, flexibility, and thickness are not in the market. Silvered or electro-plated wires are an utter snare and delusion; they break, or they *bend*, or they otherwise fail one at the most critical periods of an operation. I advise the general practitioner, even one who will never attempt any plastic operation beyond repairing a recently torn perineum, to insist on his instrument-maker guaranteeing him a few yards of silver wire, toughened, perhaps, by a slight alloy, but not electro-plated rubbish. There are several varieties of thickness which may be employed for different purposes. No. 24 is a strong though flexible wire, suited for stitching the deep perineal tissues, or for bringing together the abdominal walls in abdominal section. No. 28 and No. 30 are more suited for vesico-vaginal operations, or stitching the torn cervix, but occasionally a stouter wire is preferable in this latter case, when the parts are indurated and the gaping is persistent.

Silk is also spun of very varying thickness, and the medium sizes are still preferred by some, where the majority prefer silver. If made of silk only, and well carbolicised, they are certainly available for such purposes, but not so safe as good wire. Some years ago I tried alternate silk and silver sutures for the abdominal walls in ovariectomy, and I had, in the same cases, several small purulent foci around the former and none about the latter. For the pedicle in ovariectomy the strongest makes of pure China silk answer admirably.

Gut Sutures, thoroughly carbolicised, may be used for tying small vessels within a closed wound, but torsion should nearly always suffice for these. There are few who dare trust the ovarian pedicle to them; but either they or fine silk ligatures do well for small adhesions, and are never heard of more. For deep sutures about the vagina, where it would be almost impossible to reach them for removal, without injuring lower and recently united parts, the gut suture answers well, and in time it entirely disappears. Lister's chronic cat-gut ligature lasts a considerable time, where that is desirable, and Bantock greatly prefers the so-called silk worm gut.

Gut and silk are tied in the ordinary knot, but wire requires to be twisted or clamped. I think there is a strong tendency to



FIG. 60.—Silver Wire Twisting (Emmet).

abandon the latter procedure in favour of the former. When the wound is upon the external surface of the abdomen or perineum, twisting can be performed by the fingers alone, as well as by any instruments,—the more nimble the fingers, the more is this true; but when this has to be done within the vaginal or other cavities, two instruments are useful or even

essential. One of these is a minute fork (fig. 60), through the slit in which both ends are carefully placed, and shouldered together at the right spot, while the twisting is performed by the other, a broad pair of forceps. Removal is effected by gently lifting the twisted portion, snipping one side close to it, and then drawing the twist slowly over towards the cut side, while the edges of the wound are pressed with the closed scissors. The operator will find many minute and valuable suggestions on the whole subject of sutures in Emmet's *Principles and Practice of Gynecology*.

Introduction of Remedial Substances.

Vaginal Injections.—Vaginal injections are required either for the purpose of introducing remedial fluids to the walls of the vagina, in the various chronic or acute affections of that organ, for washing away hurtful discharges, or for the effect to be produced upon the surrounding organs and tissues. The various substances—astrigent, antiseptic, soothing, or alterative—employed for the first of these indications, will be mentioned in Chapter V. and elsewhere, but their efficacy is often unpaired or entirely destroyed by faulty methods and instruments. The classical elyster-pump of Mohère's time is entirely out of date, and the little glass



FIG. 61. Higginson's Syringe.

or pewter instruments sold in the shops are almost absolutely useless. Every vaginal injection-syringe should be furnished with a slightly bulbous, hard enontchone nozzle, some five or six inches long, and this should be perforated at its sides, and not at its extremity, otherwise there is a risk of performing an involuntary intra-uterine injection. If well made, the lateral orifices should also perforate the tube obliquely in a backwards direction. Fitted with such a nozzle, there is nothing better for ordinary purposes than Higginson's syringe (fig. 61). If the patient is strong, she can, in ordinary cases, use it herself, and it is very easily managed by an assistant. When frequent or continuous irrigation is required, it is better, however, to depend on simple gravitation

or syphon action, the fluid being placed at a higher level than the patient, and allowed to gravitate downwards by its own weight. Fig. 62 illustrates the principle of the vaginal douche, and it requires but little inventive genius to extemporise such an one in the cheapest possible fashion, while much more elaborate forms of the same thing are purchasable. Brass pumps and patent winding-up syphons are quite unnecessary.

The *position* of the patient is of great importance. For simple washing, or mild astringent injections, the semi-sitting posture over a hip-bath, chamber utensil, or *toilet*, may answer; but it is very fatiguing, and fails to allow of the full effect of any remedy. To get the full advantage, the patient must lie on her back, with her hips well raised, so that the fluid gravitates backwards. Some ingenuity is required to place the bed-pan securely under the hips, and to guard the bed with a waterproof sheet so that it does not become wet or soiled; and this difficulty may sometimes be avoided by attaching to the tube a double vaginal piece (fig. 63), which directs the stream continuously where desired. It is difficult, however, to secure perfect adaptation of this to the calibre of the vagina or vulva.

Hot Water Injections.—Dr T. A. Emmet has conferred an invaluable boon by introducing into practice the injection of very hot water into the vagina, not for its own treatment only, but for the purpose of removing congestions in every part of the pelvis. Already this is acknowledged on all hands as a most perfect curative measure in many forms of uterine or pelvic disease, though it is seldom carried out quite efficiently. Explain it as we may, it is an undoubted fact that very copious injections of very hot water, with the pelvis well raised, do tend temporarily, and often permanently, to remove that venous congestion which is the most troublesome element and the greatest obstacle to recovery in all utero-pelvic troubles. In all chronic enlargements of the uterus, in all cases of chronic pelvic cellulitis, and in the chronic inflammatory conditions of the cervix, with or without fissure, I know of no one remedy which gives so much relief. The value of these injections in renovating diseased mucous surfaces, and preparing them for operative proceedings, is also inestimable. Holding this opinion of the value of hot water so employed, I may perhaps be excused if I use Emmet's words instead of my own, premising that such injections, commencing



FIG. 62.—Vaginal Douche.

at 95° F., may be gradually increased up to 105°, 110°, or upwards, according to the patient's feelings. I have no experience of the almost



FIG. 68.—Dougie Nozzle for Vaginal Syringe.

boiling injections (140° F. and upwards), which have been lately used in small quantities, directed through the speculum, and sucked up again through it, so as to avoid scalding the skin. Emmet says:

"The use of hot water vaginal injections is equally beneficial in all those conditions which constitute the vari-

ous forms of diseases in the female organs of generation, and which are amenable to any treatment other than a surgical procedure; and equally so, whether the congestion be venous or arterial. This remedy is not to be considered as a 'cure-all,' but one of the most valuable adjuncts, under all circumstances, to other means. Yet so beneficial is it, except in displacements of the uterus, that I believe more can be accomplished in the treatment of the diseases of women by its use, and a carefully regulated plan of general treatment, than by all other means combined. The full benefit can only be obtained by administering it while the patient is lying on her back, and she cannot efficiently give it to herself. It is also necessary that her hips should be elevated, and the quantity of water used should not be less than half a gallon for each injection. . . . A bed-pan of proper size and shape is indispensable, the one known as the English bed-pan answers the purpose very well. The shovel-shaped bed-pan does not. . . . The hollow handle may be turned to one side, and a piece of india rubber tubing stretched over it to allow the water to pass off into a receptacle placed alongside of the bed. The vessel of hot water is placed on a chair by the bedside, and the nurse passes the nozzle of the syringe over the perineum into the vagina, directing it along the recto vaginal wall until it has reached the posterior cul-de-sac. The water must be thrown in, at first, very carefully, until the vagina has become distended. If the nozzle is not properly introduced, the stream of water may be thrown directly into the uterine canal. At the conclusion of the injection, the vagina can be emptied by depressing the perineum for a few seconds. A strong stream is better as serviceable as the uncontrolled current from a Davidson's (Jocob's Higginson's) syringe. Hence it would seem as if in addition to the heat of the water the jet from the syringe acts as a stimulus to excite the blood-vessels to congestion. The temperature and quantity of water are to be varied according to circumstances. When treating the catarrhs of inflammation it is necessary that the temperature should be elevated

rapidly from that of blood-heat to 110° F., or to as high a degree as can be borne by the patient, and that the injection should be often repeated. For ordinary use, a gallon of water, two or three degrees above blood-heat, is generally sufficient, but the temperature must be maintained at the highest point. This 'cooking process,' as it has been slightly termed, is rendered easier by the use of ivory, or some other non-conducting material, for the nozzle of the syringe, since the patient suffers more from the heated metal surface of the ordinary nozzle coming in contact with the outlet of the vagina than from any degree of heat in the water."

Vaginal Plugs or Tampons.—Plugging of the vagina is resorted to for the purpose of controlling hæmorrhage; but besides this, plugs of various material are often introduced for the purpose of conveying remedial agents intended to act on the vagina itself, the cervix uteri, or surrounding parts. For the purpose of thoroughly plugging the vagina for the control of uterine hæmorrhage, the speculum should always be used—either the largest tubular form or the duck-bill. The upper part of the vagina and the cervix being cleansed as far as possible, a small piece of lint, well saturated with the glyceroles of tannin and phenol, is attached to a long and strong thread, and packed well over and around the cervix, the thread being allowed to hang through the speculum. In many instances it is advisable previously to place a tent within the cavity of the cervix itself. For the rest of the plug various substances may be used, absorbent cotton-wool, strings of lamp wick, lint, carbolised tow, or tenax. I prefer the last of these when it is available. It should first be well damped with carbolic solution. Portions rather larger than a walnut are now introduced, one by one, by the speculum forceps, holding back the string of the original pledget while they are successively packed, first around the cervix, and then side by side, so as tightly to fill the whole vaginal cavity. If the tubular speculum is used, it is gradually withdrawn; but in serious cases, where every drop of blood lost is of importance, and where assistance is available, there is no doubt that the operation can be more satisfactorily performed by means of the duck-bill. When the whole vagina is thoroughly packed in this way, there is, until its removal, a perfect security against external hæmorrhage. But the danger of internal bleeding into an enlarged uterus, and of reflux through the Fallopian tubes, must never be forgotten. Fortunately, in most non-puerperal cases, the introduction of a firm medicated plug into the cervix uteri (fig. 64),¹ or a tent, and its retention there for a short time by even a loose vaginal plug till expansion occurs, is sufficient to obviate the necessity of vaginal

¹ When a small plug is drawn well into the cervix by Chrobak's instrument, it must be retained by a probe while the instrument is withdrawn, and subsequently pushed more firmly home.

plugging. No vaginal plug should ever remain beyond twenty-four hours, or less if a tent has also been employed. The mass may be gradually removed by the forceps, or after a portion is removed, it may be possible to slip the duck-bill blade behind the rest, but generally the upper part is soft and slippery, and, by drawing at the cord of the first pledget, it will come away with but slight assistance from the forceps.

India-rubber vaginal dilators are not so serviceable as the plug in non-obstetric practice. It is almost impossible to dilate them so thoroughly that blood will not ooze freely around them.

The introduction of vaginal tampons or plugs as conveyers of local remedies is of frequent necessity, especially since the valuable properties of glycerine have been understood. Its free extraction of watery fluid from all the surrounding parts tends to render it one of the best alterative remedies we possess. Next to, or alongside of, the use of hot water, no other remedy has obtained such a hold among all practitioners, and in all countries. Absorbent cotton is the best substance for this purpose. The size of tampon used will depend on whether we wish to apply it merely to the summit of the vagina or partially to fill its cavity, and will also depend upon the calibre of the organ; generally one about the size of a walnut is required. I do not think the shape is very material, though some writers lay great stress upon it. A strong cord is tied round its centre, long enough to hang through the vulva. Having been well soaked in the material required, it may be introduced either by the practitioner or nurse, or patient herself, by means of Barnes's instrument (fig. 65), which obviates squeezing out and waste of the saturating fluid. More rarely the speculum may be required to secure



FIG. 64. — Instrument for Plugging the Cervix Uteri (Chrobak).

complete apposition to any particular surface, but very commonly, with the glycerine plug at any rate, the patient can simply push it home with the vaginal nozzle of a syringe. Glycerine and the various glyceroles of astringent or antiseptic substances lend themselves most easily for use by tampons, but many also use in this way emollient ointments of vaseline or petroleum jelly, or powders sprinkled upon the surface of these. Such applications of powders are apt to be irritating and diffi-

cult of removal, and are preferably exchanged for solutions or medi-



FIG. 65.—Barnes's Tampon Introducer.

cated pessaries. Cotton, to be used as a styptic or antiseptic plug, can with advantage be kept ready as a dried preparation, and boracic acid, carbolic acid, thymol, iodine, iodoform, salicylic acid, alum, or sulphate of iron, can all be obtained thus combined with cotton-wool.

In several other ways cotton or other tampons are occasionally used, but these will be referred to in their appropriate context. To temporarily retain a tent or intra-uterine stem pessary, to act as temporary pessaries for the support of the uterus, where harder ones cannot be borne, to absorb the overflow of caustic solutions or substances applied to the cervix uteri, and as applications to recent sutures or raw surfaces, all these indications are occasionally fulfilled by the cotton-wool or tenax plug, the former material being preferable in the last instance. I have not given a very extensive trial to a plan recommended by Taliaferro, and highly commended by Paul Mundé, viz., the close packing of the vagina for twenty-four hours at a time with dry wool, cotton, or other substances. Pallen recommends wet clay. The object is to support and stimulate the pelvic vessels, and so to get rid of the passive venous congestion which, in chronic uterine or pelvic disorders, is the main cause of back-ache, sensation of fulness, and bearing down. I have certainly not tried the clay, but I have tried packing with dry cotton-wool in a few such cases, and the irritation produced has always seemed to me to counterbalance any benefit. It is, however, a resource open to us in a class of cases which are tedious and intractable beyond endurance. I should just mention a little instrument of Sims's, the tampon extractor (fig. 66),



FIG. 66.—Sims's Tampon Extractor.

which, though by no means essential, is useful in removing pledgets of damp wool. A few slight twists serve to entangle it in, and so to break down, the mass.

Medicated Pessaries.—By these we understand the combination of medicinal substances with an adhesive material which will melt some time after introduction into the vagina, and allow the remedies to become applied to the surrounding wall. The excipient most commonly used is the oil of theobroma or cocoa butter, and the pessaries may be extemporised thus. Take an ounce of the cocoa butter and melt gently, with or without a few drops of olive oil, according to the heat of the weather, stir in carefully sufficient of the medicament for eight pessaries, then pour the whole into a roll of writing-paper which has been shaped round a small ruler; when cold, cut into eight portions, and shape each with the fingers at one end so as to give it the form of a conical bullet. Wax and lard in combination are also used, but they are inferior. On the large scale, and with proper moulds, very excellent pessaries are made of soluble gelatine. The mass is made by immersing one ounce of gelatine in four ounces of water for a few seconds; then drain, and in half an hour add four ounces of glycerine to the residue. Dissolve in a water-bath. Should weigh six ounces (Martindale's Extra Pharmacopœia). We can combine fluid medicaments in this manner only. One great advantage of pessaries is that they can be easily introduced by the patient herself, often even by virgins.

The following list of substances applicable in this way, separately or in combination, with the quantity for each pessary, is compiled from Squire, Mundé, and other sources:

<i>Antacid.</i>	Acid. carbolic., gr. ii.
Sod. bicarb., gr. xv.	Acid. boracic., gr. x.
<i>Alterative and Resolvent.</i>	Thymol, gr. v.
Plumb. iodid., gr. v.	<i>Emollient.</i>
Pot. iodid., gr. x.	Bismuthi oxid., gr. xv.
Pot. brom., gr. x.	Sod. borat., gr. xv.
Unguent. hydrarg., gr. xx.	Zinci oxid., gr. xv.
<i>Astringent.</i>	<i>Hæmostatic.</i>
Zinci sulpho-carbolat., gr. v. ad x.	Ferr. perchlorid., gr. v.
Acid. tannic., gr. x.	Ferr. sulph., gr. xv.
Acid. gallic., gr. x.	<i>Sedative.</i>
Alum sulph., gr. xv.	Atropin sulph., gr. $\frac{1}{3}$ ad $\frac{1}{2}$.
Catechu, gr. xv.	Ext. belladonnæ, gr. i. ad iii.
Ferro-alumen, gr. x.	Ext. cann., gr. v.
Plumbi Acet., gr. v. ad x.	Morph. hydrochlor., gr. $\frac{1}{4}$ ad $\frac{1}{2}$.
Matico, gr. x.	Ext. opii, gr. ii.
Ferr. sulph. exsic., gr. x.	<i>Extra.</i>
<i>Deodorant and Disinfectant.</i>	Iodoform, gr. v.
Calc. carbolat., gr. xv.	Chloral hyd., gr. x. ad xxx.

It is somewhat unfortunate that the term "pessary" should be used

to designate both these medicated bodies and mechanical supports, and it would be better to speak of vaginal "suppositories," but I have followed the usual custom.

Intra-uterine Medication.—There is no part of our subject, perhaps, which, more than this, requires delicate handling in a work that shall convey to the student only such principles and methods of action as commend themselves by their approved safety and utility. Within the last few years the endometrium has been subjected to methods of treatment, many of them bold, not a few of them dangerous. The estimation of such of these as I consider it desirable to mention at all can only be made when referring to the affections for which they are employed (see especially Chap. VIII.) Dangerous diseases may warrant dangerous remedies, which are highly to be deprecated under other circumstances—but a few general remarks here on the subject may avoid much needless repetition.

The whole interior of the cervix is often easily enough reached in disease, or a very slight dilatation enables us to reach it, while there is free egress for all superabundant applications, and sight comes to the aid of touch. Almost everything that can be used in a liquid form can be introduced into the cervix by the Playfair probe (fig. 9), armed thickly, or tightly and thinly, with cotton, as formerly directed, but it is an undoubted improvement to have the terminal wire made of incorrosible aluminium. A great difficulty often lies in our way in the impossibility of removing the tough mucus which coats the cervical wall. Wipe it as we may, this remains adherent, or there is more to follow, and the remedies cannot reach the diseased surface. The free previous use of Emmet's hot-water vaginal douche is the best remedy for this state of things, but if the cotton upon the probe be moistened with glycerine we can generally succeed in removing all mucus without undue irritation. I shall have to insist, by and by, on the importance of using the milder alterative local remedies in the earlier stages of cervical disease, combined with constitutional treatment, before the mucous surface is irretrievably ruined by the more powerful caustics; but even when these are absolutely necessary, the practitioner who knows the dangerous properties of the caustics he is dealing with, and who has *tactus eruditus* in his fingers, can do much safely with a tubular speculum and a Playfair's probe properly armed, and only medicated with those agents which are fluid or soluble. In hospital practice, or wherever there is intelligent assistance available, the duck-bill is decidedly preferable. But some additional precaution is generally advisable to ensure application of these agents only to the desired surface, and to prevent their trickling down to other parts. It is always a good plan, no matter how inert the fluid may be, to pass up a little plug of cotton, and plant it just below the

cervix, so that it receives any overflow. After the application has been made this is removed by the forceps, the outside of the cervix and the vaginal *cul-de-sac* are wiped dry, and a second plug moistened with glycerine, and attached to a string, is planted against the end of the cervix, and held there with the forceps till the speculum is removed. This again is withdrawn in a few hours. Tincture of iodine, or the various glyceroles, or even more corrosive solutions, are applied in this way; but nitric acid, the fluid nitrate of mercury, bromine, chromic acid, and liquefied chloride of zinc, require more careful management. The whole surface around the cervix must be carefully packed with damp cotton, moistened with strong solution of carbonate of soda in the case of the first two, and the escharotic should be applied by means of a wooden skewer, which answers better than a glass point. Pure carbolic acid, *i.e.*, absolute phenol with 6 to 10 per cent. of water to ensure its fluidity, may be safely managed with the well and tightly coated probe. Potassa fusa, and potassa & calce made into a paste with alcohol, must be carefully lifted in small pieces and applied to the exact spot with moderate firmness, while plugs well soaked in vinegar guard all the surrounding tissues, and free injections of the same fluid are subsequently used. The solid nitrate of silver requires its appropriate caustic holder, which will also serve for solid sulphate of zinc or copper. The application of these and other substances will, however, call for future remarks.

Local applications above the os externum are more serious matters in every way, and for a description of the various modes of using intra-uterine injections, ointments, or other media, I must refer the reader to Chapter VIII.

General Management of Gynæcological Operations.

It is very advisable to adopt some amount of constitutional and local *preparation* before even very slight operations.

Constitutional Preparation.—Every kind of risk—the danger of septicæmia and all that is included therein, of shock, of non-adhesion of surfaces that are intended to unite, and even of hæmorrhage,—is greatly diminished by previous attention to the health of the patient. By careful regulation of the secretions of the skin, bowels, liver, and kidneys, by nutritious and non-stimulating food, by the supply of pure air, and by the remedying of any known defect in hygiene, as long as possible previously to any operation, its average mortality is largely diminished, and its successful issue is ensured. The urine, if too acid, should be neutralised by lithia water, and if alkaline or phosphatic by benzoic acid

or other usual remedies. At the time of operation also we must ensure complete freedom from the noxious influences derivable from any possible septic, zymotic, or pythogenic source. Before any operation of at all a serious character is undertaken, especially if it involves the peritoneal surface, or the pelvic cellular tissue, a careful examination should be made to ascertain the absence of any grave constitutional affection, such as phthisis or Bright's disease. It is very rarely, indeed, that during the existence of these, operations are desirable or permissible. Wherever it is possible, operations on the female sexual organs should be performed only between two menstrual periods; the most satisfactory time is a few days after the cessation of the flow. Considering the local and general hyperæsthesia and hyperæmia which normally occur at these periods, the precaution is an obvious one, but menstrual irregularities resulting from the disease requiring operation, or from the fear of the operation itself, will often compel us to admit with Burns that "the best laid schemes of mice and men gang aft aglee." A bright day, with a moderately high barometer, should if possible be chosen for all important operations, and the fewer bystanders, who may possibly have septic influences about them, the better.

Local Preparation of the parts, in operations on the genital tract, is no less important than previous constitutional treatment. For this there is no means equal to the steady use, for some time before, of Emmet's hot-water douche. Used by itself alone it relieves congestion or œdema, and gives a tone and a vigour, to the whole tract, and to its connective coverings, which almost compel success. The frequent application of a little tincture of iodine with a brush, followed by a glycerine plug, to the surfaces about to be operated upon, is of great service in rendering them prone to adhere, and less likely to bleed unduly. It is not unknown as a clinical fact that, with these precautions, intended operations have often been entirely forestalled by the unlooked-for cicatrisation of a torn perineum or cervix uteri, or of a vaginal fistula. Time spent in this way is all gain and no loss.

Antiseptics.—I cannot refuse here to face the question of the value of Listerism. Yet, considering the conflicting opinions, and still more conflicting facts, which have been recently adduced for and against it—with Wells and Keith, Tait and Bantock, and Thornton, to say nothing of foreign authorities, utterly divided on the subject, not only among themselves, but from their own selves at other periods of their practice, it would be highly unbecoming in me to speak too dogmatically. We must appeal to the future for guidance. Yet those who have to act in the living present, and to teach others how to act for the best, may not decline to adopt, and to counsel the adoption of measures based at least on carefully formed provisional hypotheses. One thing I can say dogmatically,

and without a particle of hesitation, that no belief in, or practice of, the strictest antiseptic precautions, in the way of dressings, sprays, or otherwise, warrants the neglect of preventive foresight against the septic, zymotic, or pythogenic influences indicated above.

Antisepsity, in the sense of absolute cleanliness—cleanliness in little minutiae which, but for the germ theory, were ludicrously precise—is now adopted by everyone as a rule of practice. We owe this to Lister, and with it we owe a saving in human life and suffering which can never be statistically recorded. There were wise surgeons in the far past, notably he who invented that wonderful ointment to be applied to the lethal weapon, while the wound itself was to be constantly washed with spring water, and not otherwise meddled with; but the wisest of them all never persuaded the profession that to “wash and be clean” was the most important, and often the most difficult triumph of their art, till Lister furnished the all-powerful motive. I cannot, moreover, resist the conclusion that the result of such absolute and minute cleanliness as is now constantly observed in surgical proceedings, goes very far in itself towards proving the germ theory of all septic mischief—the theory, at any rate, or I would rather say the fact, that germs and *sepsis* go hand and hand, and that the prevention of the one means the prevention of the other.

Much careful work is being done at the present time, and a good deal that is not over-careful, towards estimating the relative value of various germicides or antiseptics in varying circumstances, but of none can it yet be said, as of carbolic acid, that it fulfils in the simplest and safest manner most of the required conditions. Thymol, boric acid, eucalyptus, bichloride of mercury, permanganate of potash, quinine, salicylic acid, chromic acid, iodoform, tar, and a host of other substances, have all certain antiseptic properties, and I make free use of them all; but I think it is advisable, for the present at any rate, to look upon carbolic acid as the regulation substance, although bichloride of mercury, 1 in 1000 to 2000 solution, is a wonderfully cheap and active agent for antiseptic injections, especially in midwifery, and I have as yet seen no ill effects from its use. When carbolic acid is not contra indicated, and I hardly know when it is, I mingle it freely with every fluid used for injections or ablutions. I adopt, with it, all the now common precautions as to instruments, sponges, and other operative armamentaria, although I never allow it to prevent my choosing new sponges when they are within my reach, and I believe that these precautions are equally applicable to, and necessary with, every sound, catheter, speculum, or other instrument in ordinary diagnostic use. I feel certain, moreover, that few, if any, of the untoward results which sometimes follow the careful and skilled use of the sound, the tent, or even the speculum, would occur, if one always

here in mind the danger of septic poisoning, and the ease with which it might be averted. A dirty finger is more dangerous, and has, to my personal knowledge, done more damage, when introduced *per vaginam* than even a clean uterine sound pushed into the middle of the abdomen. A 5, solution is advisable for all these purposes of instrumental or manual purification, but it will not clean a man's nails or scour the teeth of a torsion forceps. I have seen the Listerian spray, and gauze, and all the rest of it, used, while the operator left a black deposit behind him every time he compressed or twisted a vessel. The nail-brush, and soap and water, are as essentially a part of antiseptic surgery as germicide specifics. I am not sure, if I were compelled to choose between the two, which I should prefer, but the choice is totally unnecessary. The dressing of vaginal wounds or sutures with Lister's formulae of gauzes, &c., is simply impracticable; but his indications are, as far as possible, fulfilled by smearing them at the time of operation, and afterwards from time to time, with carbolic glycerine, 1 in 10. The vulva should, in all such cases, be closed by a diaper or other dressing, soaked in the watery solution and only partially dried. If abdominal incisions, as in ovariectomy, are well smeared with carbolic glycerine, and if a few folds of lint well saturated with it are applied, the wound may be safely left for ten days or more, provided that we are not encumbered by a drainage tube, and that a layer of mackintosh overlies the dressing. I used this excellent dressing with perfect success during the hottest weather of this year (1884), when Sir Joseph Lister found some of the more volatile agents fail in his own hands ("Address on Corrosive Sublimate as a Surgical Dressing," *Lancet* or *British Medical Journal*, October 25, 1884).

As to the use of the spray in abdominal operations, I own that my views have become unsettled, and that my practice has been rendered somewhat illogical. I have never, in my own practice, been able to convince myself that a single bad symptom has followed the use of carbolic acid in any form. I apply it freely, as a strong glycerole, to the ovarian pedicle, to the external wound, and to any intra-abdominal raw surface that I can find. Much of it must find its way into the abdominal cavity in every case, but I have never seen even the carbolic urine—the dark smoky looking urine described by so many writers,—except in one case, where, as in many scores of others, I had applied a single drop of pure carbolic acid to a urethral growth. But the long-continued spray may undoubtedly produce cooling of the peritoneum, which may prove unduly depressing. In hospital practice, therefore, where the septic risks must always be in the ascendant, I use the spray in abdominal section, having it as warm as possible, and throwing it right across the incision; while in private practice I think that other antiseptic precautions enable

us, as a rule, to dispense with it. I find that several of my surgical colleagues have independently arrived at a similar practice. In operations on the vulva and vagina the spray is excessively troublesome, and is advantageously replaced by a very delicate jet of hot carbolic water directed occasionally upon the bleeding points. This has the additional advantage of being a valuable hæmostatic.

After-Treatment of Operations.—This is also a matter of the highest importance. Reaction must be encouraged when shock exists. Hot-water bags to the limbs or trunk, and the subcutaneous injection of 20 minims of ether, or the rectal administration of beef-tea and brandy, may be required for this purpose; and when the reaction has fairly commenced it is aided and steadied by the administration of morphia in small doses subcutaneously. Subsequently, the diet, in almost all cases, should be light and sparing, and stimulants are not required except in the case of septiciemia or considerable shock. After ovariectomy I think the patients do best on very nearly starvation diet, a few teaspoonfuls of iced milk occasionally, for three days or more; but, of course, there are exceptional cases. Opium may be freely given in nearly all cases, unless there be some special susceptibility, which had better be ascertained previously. I was recently obliged, fortunately without ultimate bad results, to keep a patient, on the next day after ovariectomy, under almost constant galvanic stimulation, with strong coffee, &c., from the result of two subcutaneous injections of $\frac{1}{4}$ of a grain of morphia, administered after reaction had fairly taken place. But in most patients the lulling effect of morphia is very valuable, together with its aid in keeping the bowels at rest. In many gynecological operations—vaginal, uterine, or abdominal—it is desirable to keep the bowels locked for eight or ten days. After repairing the torn cervix, this precaution is not necessary or advisable; on the contrary, the bowels should be relieved daily by enemata or gentle laxatives. In the repair of ruptured perineum, we have a choice of evils, for if the bowels are too long locked the mass may become hardened to such an extent as to tear through all before it. It is therefore perhaps better, as I have stated above, to leave the matter to nature. For the purpose of renewing the action of the bowels, a drachm of castor oil, with one of glycerine, may be given the night before. If this acts spontaneously next morning, well; but the patient should avoid all straining. It is better in all cases to carefully inject two or three ounces of warm olive oil into the rectum, and to encourage the patient to retain it for some time. The bladder requires equally careful attention, and it is always better, in all cases of abdominal section or plastic operations on the vagina, to empty it artificially for the first week or ten days, or even a fortnight. The dribbling of stale urine, and

the fatigue or exertion involved in spontaneous evacuation, are equally avoided. If I have a thoroughly reliable and well-trained nurse, who can use the instrument skilfully, with the patient on her back, avoiding droppings, and keeping the instrument a-septic, I prefer the urine to be drawn off at stated intervals of not longer than six hours, or much more often in operations directly affecting the bladder. But when



FIG. 67.—Sims's Sigmoid Catheter.

this is not the case, a modification of Sims's sigmoid catheter (fig. 67), in vulcanite or silver, may be tied into the bladder for the first few days. It must be so balanced as not to press on the fundus, and must be cleaned frequently by the practitioner and reintroduced. The end may be plugged and the plug removed for urination, or, especially in vesico-vaginal operations, a cup may be placed so as to catch the urine as it dribbles away. If the catheter be made of block-tin it can be more easily moulded than a vulcanite one to suit the individual case, but is hardly so pure and clean. Skene's modification of Goodman's self-retaining catheter (fig. 68) is also a very useful instrument. It is only two inches long, and has an india-rubber tube attached to its outer extremity. Every metallic catheter, when not in use, should lie in the carbolic solution.



FIG. 68.—The Skene-Goodman Self-retaining Catheter.

Anæsthesia.—I can hardly here enter into the vexed question of the different anæsthetics. Nitrous oxide, from the short duration of its effects, is seldom available in gynecology, except as a prelude to chloroform or ether, or in cases of tapping, lancing, or other very rapid proceedings, when the fear of the patient is greater than the actual suffering. Bichloride of methylene is greatly preferred by Wells in ovariectomy, chiefly on account of its slighter tendency to produce sickness and retching, and very many operators follow his example. I have tried it for diagnostic purposes, but have not so far been able to attain the same advantages here as from chloroform. In ovariectomy one can keep up continuous insensibility to pain, while the patient seems to be somewhat less under its general influence than is necessary when chloro-

form is used. Recent observations have shown that this substance is probably a mixture of four parts of chloroform and one of methyl alcohol. A combination of alcohol, chloroform, and ether in the proportions of one, two, and three parts is used by many. I have, however, seen it so often followed by all the baneful effects of too large a dose of alcohol, that I do not like it. Ether or chloroform separately is still in preponderating use in ordinary gynecological proceedings, and the wave of reaction in favour of the former, so powerful in America, has had comparatively little effect in this country. In abdominal operations especially, the irritating effect of ether upon the pulmonary organs is much to be deprecated. Anæsthesia and the use of chloroform are almost interchangeable terms in general British practice, and I confess in my own. For diagnosis, anæsthesia is useful in many ways. It enables examinations to be made, otherwise of a most painful character—it relaxes the abdominal and other muscles, especially the sphincters, and it overcomes the painful feelings of shame or modesty, especially in the case of necessary examinations in young girls or virgins. In many cases of hyperæsthesia of the external parts it therefore becomes necessary for an accurate diagnosis, in virtue of all the above-named properties, and it is hardly possible without it to ascertain the normal dilatability of the sphincters or to overcome their morbid spasm. When delirium is present, or pain from acute inflammation, or with intractable or malingering patients, it is equally useful. The diagnosis of certain abdominal tumours, especially of phantom tumours or spurious pregnancy, is rendered absolutely positive by it, and in all cases of bi-manual examination, where doubt remains as to any important point, a re-examination with anæsthesia will render certainty possible. In fact, such an examination is almost as superior to one without anæsthesia as the latter is to a digital examination with one hand only. For operations on the lining membrane of the uterus, such as curetting, scarification, and even paring or stitching the cervix, it is seldom required on account of pain merely, but to allay fear or overcome restlessness it may become necessary. Emmet strongly warns us of the danger of ether, and presumably of chloroform, in advanced cystitis or kidney disease, and in such cases it should if possible be dispensed with. It has been noticed that many of the accidents which have happened during anæsthesia have occurred just at the moment when the first painful incision was made, or an cernæur was tightened, or a painful ovary was compressed. The correct deduction from this is that the anæsthesia was insufficiently complete, and allowed of reflex inhibition of the heart's action from the pain still felt and conveyed by the nervous system. I have twice seen apparent death thus caused in operations on uterine tumours, the patient being rescued in each case by inversion of the

body. An opposite danger, however, is to be guarded against. In operations on the genital organs in young and sensitive women, consciousness or semi-consciousness, and sensibility, return amazingly quickly, and this may lead to the apparently safe exhibition of large and repeated doses of the anæsthetic. At the close of the operation, when all stimulus of pain ceases, the tendency to all the dangers of anæsthetics is often found to develop itself suddenly. For operations on the external genitals Richardson's ether spray may occasionally be of use, and the newly introduced cocaine seems also to have a future as a local anæsthetic in similar cases. Carbolic acid applied to a wound produces, after its preliminary smarting, a numbing effect.

CHAPTER IV.

HYGIENIC AND MEDICAL TREATMENT IN THEIR RELATION TO FEMALE DISEASES.
Influence of Menstrual Periodicity. Food. Stimulants. Clothing. Exercise.
Bathing. Education. CHLOROSIS, its Nature and Treatment. NEURASTHENIA
in its various Forms.

HAVING in the previous chapter spoken of the means employed in the management of female diseases, when, whatever the causation may be, the manifestations are local, and demand local treatment, it seems advisable now to hasten to say something about hygienic conditions, and more purely medical treatment, a timely recourse to which would often prevent the necessity for the interference of surgery.

I assume, as an axiom, that the medical and hygienic treatment of female diseases is, like their pathology, common to the wide field of medicine. Yet there are a few points to which special attention should be briefly drawn here, and the first of these is *the necessity for bearing in mind, without unduly exaggerating, the influence on female health of menstrual periodicity.*

Tilt surely goes a little too far when he asserts that "the knowledge that menstruation is a natural function does a world of mischief," but there is a substratum of practical truth underlying the remark. We know that in almost all women the function is accompanied by nervous and vascular phenomena, which have a real existence, and which temporarily place the woman in a different physiological state from that which is usual, and in one more liable to departure from health, on slight provocation. We know, also, that comparatively slight departures of this kind, repeated, confirmed, and exaggerated from month to month, lay the seeds of future diseases of the gravest character, of uterine displacements, uterine catarrh, and pelvic congestions, and not infrequently of more acute maladies, such as hæmatocele or pelvic cellulitis. In other cases it is the nervous system which becomes unstrung from being subjected to work while under unusual tension. This is not a mere hypothesis, it is a statement of fact. There are few physicians who have not seen, during an extended practice, instances of sudden death from hæmatocele, or of bright careers of mental work and usefulness cut short, never to be resumed, after a few day's hard work during a menstrual period. It cannot, therefore, be too strongly insisted on, that,

in the case of the young or the delicate at any rate, and to some extent in all women, the period of menstruation should be a period of comparative repose. Women have quite sufficient tact to ensure this without any unnecessary parade; and it is for those who organise their work of any kind, mental or physical, to give at least a chance for the employment of such tact. Let it only be clearly borne in mind that, in ninety-nine out of every hundred women, there are periodical occasions when they can only work as they may do at other times, with more or less peril to their mental and bodily health. Even after menstruation has merged into pregnancy, the periodic law is, though dormant, still existent, and miscarriage is most easily provoked at the usual epochs of menstrual activity.

While, as I have said, the laws of hygiene are the same for the male and for the female, they especially affect the one sex or the other according to many of their special surroundings.

The Food Supply of our women is by no means what it ought to be, the result of fashion in some cases, of poverty and unwomanly work in others. Dr Thomas says that "the American woman, except in our cities, is at least half starved," and I fear the same remark applies to a large extent to our English women also. The miserable tea diet on which the women of our artisan and agricultural labouring classes so largely subsist will not suffice to nourish a healthy *matrix*, much less a healthy *proles* in addition, and among the more affluent classes fashion does what poverty enforces among those less well circumstanced. A well known metropolitan physician has recently been somewhat thinning the number of our male patients, that is, killing or curing them, and I am bound to say more often the latter, by his prescribed *menus*; he would render an equally great service if he would persuade their wives, or rather their daughters, to consume some of the red meats and other prescribed items. The more thorough tissue-changes which the female undergoes, consequent on menstruation, demand a supply of nutriment which the urban male, at any rate, scarcely requires. In his address to the Obstetrical Section of the British Medical Association (1883), Dr Graily Hewitt has discoursed well and wisely on this subject, and the recognition of the necessity of fuller nourishment in gynaecological practice forms the basis of one part of the system of treatment afterwards to be mentioned as Weir Mitchell's.

Closely associated with the subject of food is that of **Stimulants**. And yet I am very desirous of dissociating the two things. The more good nourishing food a patient can take, within reason, the less stimulation he or she requires; and yet, antithetic as it may seem, no one can less safely encounter the dangers of chronic stimulation than he or she who has badly nourished or overworked tissues. Woman, though

fashion, and the instinct of self preservation, are fortunately on her side in this respect, falls more readily and irretrievably under the baneful influence of alcoholic craving and chronic alcoholism than man. I cannot say that a little porter, or ale, or wine may not occasionally prove as useful to the female as to the male, but I believe that dietetic substitutes may be found, in all cases of chronic disease, which, if a little more costly to the poor, or less costly to the rich, leave not on the mind of the prescriber the uncomfortable reflection that he may have laid the seeds of inevitable ruin to his patient. It should never, however, be forgotten by the physician that it is not alcohol alone which leads to alcoholic craving. Tea, coffee, tobacco, quinine, strychnine or nux vomica, chloral, opium, sal volatile, and all the so-called nerve tonics or sedatives of modern pharmacy, when depended on for stimulation or sedation, lead in one and the same direction. As civilisation advances, and consequent nerve tension increases, we shall have an increasingly intelligent dread of their use, counterbalanced unfortunately by an increasing supposed necessity, and by a really lessened power of withstanding their baneful influences. I have long ceased to recommend the use of stimulants in any form of chronic female disorder, and the young practitioner who wishes to look back with pleasure upon the results of his past career, will be wise to adopt this rule of practice until he sees some very good reason for change.

Clothing is a subject of extreme delicacy, and I must entirely ignore its æsthetic aspects. But there are certain points of importance on which all physicians are agreed, and which it must be left to the ladies to reconcile with the question of outward adornment. Wool in some form, however thin, should be worn next the skin, from head to foot, in this climate. Everything which contracts the thorax is inadvisable on general grounds, and especially tends to produce pelvic congestion and other mischief. Corsets with steel or whalebone appliances are as absurd for a healthy woman as steel jointed leg pieces would be for a healthy man. The tying of a "dry goods store" round the waist or abdomen, in the form of heavy petticoats, is highly injurious, and some modification of the male system of braces is desirable. The use of high heeled shoes or boots, independently of its bad effect on the feet, throws out of gear the suspensory ligaments of the uterus, by altering the incline of the pelvis. It would be better, I think, if medical advisers would keep in view, and insist on, these few and simple facts, rather than attempt to discuss their minute realisation. Their practical enforcement in early life would obviate the necessity for many a serious surgical proceeding afterwards, when the causation of the disease can be but faintly traced to early neglect.

Proper Exercise is just as essential to the preservation of female health

as timely rest. Female football players or gymnasts are just as much an occasional possibility as female senior wranglers, though they are about equally undesirable as types of the sex. But just as the really well-cultured woman frequently excels her male competitors in moral inspiration, so the woman who has had free play for her muscles while a girl, and in young womanhood, and who has not been injured by the unwomanly work of savage or of over-civilised life, excels him, in many ways, in her powers of endurance. Few, if any, men could endure the sustained fatigue daily and hourly undergone by the mother of a family in poor or very moderate circumstances; and as the necessity for this will endure as long as the perpetuation of the race is carried on, on its present lines, it is essential that the muscular system of women should be considered in their hygienic training. In childhood the girl should be allowed and encouraged to romp as much as her brothers, and the more spontaneously, and the less according to anybody's "system" she does so the better. As womanhood approaches, a separation of the sexes becomes desirable, in order that work and play may be intermitted according to the periodic necessities of the female, and the wise parent or guardian will see that, while the necessary rest is obtained at the period of menstruation, habits of indolence and sloth are not imported into the remainder of the month.

Bathing or regular ablution of the whole surface is just as important for the one sex as the other, but during the early years of menstrual life, at any rate, periodicity must also be recognised by substituting tepid for cold water, or by intermitting the use of either to some extent at the periods.

Education.—This is a subject which, at the present moment, can hardly be touched upon without involving questions which are not always treated with the calmness and impartiality they demand. As a professor of a college and a university which are perhaps doing as much as any in England to meet the demand for female degrees, and female education leading up to those degrees, I would not for a moment be supposed to join in the ignorant clamour against such education, which is based on a desire for monopoly by the male sex. The struggle for existence on the part of single women, and the capacity of a few of their number to ignore with safety the physiological difficulties of the majority, are demanding opportunities for education, and its honourable as well as valuable distinctions, which cannot and ought not to be refused.

Unfortunately, however, up to this time, no means have been found which will reconcile this with the physiological necessity for intermittent work by the one sex. It becomes, therefore, the duty of every honest physician to make no secret of the mischief which must inevitably accrue, not only to many of our young women, but to our whole popu-

lation, if the distinction of sex be disregarded. Co-education of the sexes, i.e., either education absolutely together, or education on precisely the same lines, is already working mischief in this country, which would utterly astonish that large band of distinguished American physicians who are almost piteously holding out their hands to their own people, and demanding a recourse to what they consider the European system. Dr Edward Clarke (*Sex in Education*, Boston, 1882) speaking of co-education says :—"Neither is it asserted that all the female graduates of our schools and colleges are pathological specimens. But it is asserted that the number of those graduates who have been disabled to a greater or less degree by these causes is so great as to excite the gravest alarm, and to demand the serious attention of the community. If these causes should continue for the next half century, and increase in the same ratio as they have for the last fifty years, it requires no prophet to foretell that the wives who are to be mothers in our republic must be drawn from trans-Atlantic homes. The sons of the New World will have to re-act, on a magnificent scale, the old story of unwed Rome and the Sabines." There is hardly an American physician who has specially treated the diseases of women who does not corroborate these words. Dr Gaillard Thomas (*Diseases of Women*, 1880, p. 44) says :—"Unfortunately the restless, energetic, and ambitious spirit which actuates the people of the United States, has prompted a plan of education which by its severity creates a vast disproportion between these two systems (the nervous and muscular), and its effects are more especially exerted upon the female sex, in which the tendency to such loss of balance is much more marked than in the male. The results are, rapid development of brain and nervous system, precocious talent, refined and cultivated taste, and a fascinating vivacity on the one hand ; a morbid impressibility, great feebleness of muscular system, and marked tendency to disease in the generative organs on the other. But the mere existence of this fact is not the most melancholy feature of the case ; it is far more painful to see mothers listening to it, admitting its truth, and yet calmly and dispassionately choosing to make the trial, as we see them doing constantly."

Dr Emmet (*op. cit.*, p. 20) says :—"I hold that it is not practicable to educate a girl by the same methods found best for the boy, without entailing serious consequences, for the ovaries will always be arrested in their growth if the brain is forced. Even when the course of study is comparatively moderate, functional disturbances are of too frequent occurrence to admit a doubt as to the cause. . . . I not only endorse Dr Clarke's views as far as he has gone, but my own experience leads me to believe that the evil is even more serious than he has represented. . . . To enable her to reach the highest physical development, the

young girl in the better classes of society should pass the year before puberty, and some two years afterwards, free from all exciting influences. . . . Her dress, diet, and habits of life should be carefully looked after as if she were a child—her mind should be occupied by a very moderate amount of study . . . there should be no night studying under any circumstances. After the menstrual function has become permanent, normal in character, and free from pain, she can begin to increase the number of her studies, but afterwards, at the time of the menses, she should observe the same rule of rest, mental and physical."

Dr Goodell (*op. cit.*, p. 420) says: "From the age of eight to that of sixteen our daughters spend most of their time within the unwholesome air of the recitation room, or in poring over their books when they should be at play. As a result, the chief skill of the milliner seems to be directed towards concealing the lack of organs needful alike to beauty and to maternity, and the girl of to-day becomes the barren wife or the invalid mother of to-morrow. Surely a civilization that stunts, deforms, and enfeebles, must be unsound."

Such is the Cassandra-like tone of every modern American physician. Our own highest authorities, and therefore generally those who have attained a somewhat mature age, say much less on the topic, for obvious reasons, but the importance of the subject must justify me for inserting a quotation from a recent English writer. Mr Lawson Tait (*Diseases of the Ovaries*, 1883) says: "There has grown up a desire to educate women in exactly the same way and to the same extent as men. It would be easy for me to show, were any charge of obstructiveness or want of liberality to be made against me, that throughout my public life I have ever been in the front rank of those who advocate perfect freedom of every kind of instruction for every one who may desire it; and I have been particularly strong in the expression of my views that there should be restriction of neither class nor sex. But it is useless to disguise the fact that, inasmuch as women have functions to fulfil which men are free from, it is not to be expected that women can, with safety, do the work of men, and at the same time properly fulfil their own special functions as women. . . . This is no place to air political crochets, but I own myself an advanced advocate of women's rights; at the same time I cannot help seeing the mischief women will do to themselves and to the race generally if they avail themselves too fully of those rights when conceded. . . . To leave only the inferior women to perpetuate the species will do more to deteriorate the human race than all the individual victories at Girton will do to benefit it. This overtraining of young women is wholly unnecessary in the interests of human progress, and it is mischievous alike to themselves and to

humanity. . . . Those who advocate the equal treatment of the sexes must bear in mind that great culture in a man does not unfit him for paternity, but, on the contrary will help him in the struggle for existence to maintain a family. For women, on the contrary, exceptional culture will infallibly have the tendency to remove the fittest individuals, those most likely to add to the production of children of high-class brain power, from out of the ranks of motherhood."

This is hardly the place to discuss this question further, however, but I will merely endeavour to give us sound advice as I can on the subject to the young practitioner who may be consulted as to the education of a girl say from twelve to twenty years of age, and I may also refer him to a lecture on the subject published by me in pamphlet form (Cornish, Manchester, 1884). If asked what he thinks of the "higher education" of woman he would be right in saying that there is no field of education tabooed to her by nature, that the wider, and above all the more thorough, her education is, the better woman will she become, PROVIDED ALWAYS, as the lawyers say, that the conventional period of girlhood is prolonged sufficiently, and that she is educated where there is sufficiently intelligent oversight to acknowledge the fact that, during a portion of every month, rest and relaxation from severe work or study are required. If he is told that her success or maintenance during life depends on her working *pari passu*, or along with young men of the same age, it will be his duty to say that the Chinese cram system of the day is playing havoc with our young men, in spite of their cricket, football, and other antidotes, and in spite of the fact that they are not handicapped by the household duties which fall to the lot of all our middle class girls. It will also be his duty to say that work of this kind, carried on "week in, week out," will probably, in a large number of cases, entail either the unsexing of the girl or the exaggeration of all the weaknesses incident to her sex. In our complex civilised life, dangerous occupations must be followed by some; the risks involved, and the remuneration held out, must not, however, be concealed. To persuade the English universities to formulate degrees, and plan corresponding work for women—degrees which will be fitted to acknowledge those types of culture in which women excel, and work which will allow for their physiological position as the future healthy mothers of our race,—this must be the work of women themselves. There are better materials for this purpose in England than elsewhere, and I have not the slightest doubt that the common sense of our people will solve the difficulties involved. Mistakes are inevitable at the commencement of all great movements.

I leave those remarks on the hygiene of women, which are called for by the special conditions of child-bearing, to the obstetrician. It will, however, be well to say a few words now on two diseased conditions which,

though not by any means confined to the female sex, are much more frequently met with in its members. I allude to the condition of anæmia or chlorosis, and to that of nervous exaltation, depression, or excitability, which I have included under the one term "neurasthema."

Chlorosis.

Chlorosis, chloro-anæmia, or, popularly, green-sickness, is but a form of anæmia, of diathetic rather than depletive character, though it is often apparently aggravated or even commenced by losses of blood. It is not the same as pernicious anæmia, for, under proper treatment, its tendency to death is rare, and its curability is common. Its diathetic origin is rendered probable from its frequent accompaniment by nerve disorders, and by its frequent yielding to treatment adapted to disease of the nervous system, when ferruginous remedies have failed to produce effects such as are usual in ordinary anæmia. It is most common about the age of puberty, though it is by no means absolutely confined to that period; nor is the greenish tinge which often accompanies the pallor of the affection, and which has given to it its name (*χλωρός*, green), confined to that time of life, or even absolutely to the female sex. I am aware that many distinguished authorities, especially of the French school, draw a much wider distinction between anæmia and chlorosis than I have now done. I could not hope to define these differences, however, without an amount of logomachy, or contention about mere verbal distinctions, which is foreign to the scope of our present work.

The blood-changes found in chlorosis are—diminution in the total quantity of blood, deficiency in both red and white corpuscles, and diminution in the total as well as relative amount of hæmoglobin, to a greater degree than in ordinary anæmia. Deficiency in the albuminous constituents is not so marked or so frequent as in ordinary anæmia, and the fatty and saline constituents are also found in almost normal proportion. The fat of the body is sometimes considerably diminished, but very often, and these are the most troublesome cases, it is in excess. Anatomical changes in the tissues, especially the heart and aorta, may be slight, or may be as considerable, as in the worst forms of anæmia. Virchow held that the essential pathological condition was a hypoplasia of the heart and great vessels,—a theory manifestly inconsistent with the rapid recovery often observed. For these anatomical or pathological details the student may consult the articles on "Anæmia," "Chlorosis," and "Blood Changes" in Quain's *Dictionary of Medicine*, or Bequerel's *Maladies de l'Uterus*, vol. ii.

Symptoms.—The affection usually comes on insidiously, but is sometimes very sudden in its onset. The most striking symptoms are the

change in colour and complexion, and the pallid mucous membranes; but these are speedily accompanied by breathlessness, palpitation, dyspepsia, and great debility, and sometimes by serous effusion into the cellular tissue. This last symptom, and even optic neuritis, may occur without any albuminuria; the urine is generally abundant, pale, and of low specific gravity. A certain amount of cardiac hypertrophy is often present, and loud aortic murmurs are rarely absent. The whole of the symptoms bear a striking resemblance to many of those met with in Bright's disease, many organic cardiac affections, gastric ulcer, and chronic tubercular peritonitis; and before we can be certain of our diagnosis, these must in every case be eliminated by the most careful inquiry and investigation. Menstrual disorder in some shape is rarely if ever absent, but it may take the form of total suppression, of diminution and irregularity, or of passive menorrhagia or nervous dysmenorrhœa (see Chap. VII.) Leucorrhœa is an almost constant concomitant. It is surprising how difficult it often is to ascertain whether these conditions were antecedent to the chlorosis, and possibly causative, or succeeded to it, and were therefore possibly its effects. This chlorotic condition may continue unaltered through a comparatively long life, or it may yield to suitable treatment. There is a constant tendency to return, however, which diminishes as full maturity is reached. Neuralgia and neurasthenia, or nerve weakness, in every form, including hysteria, are frequent accompaniments of chlorosis, and yield to the same treatment; but it cannot be denied that they may severally exist quite independently of one another.

Causation.—Our present knowledge of the pathology of chlorosis or of ordinary anemia is so imperfect that it must render us cautious in dogmatically assigning their efficient causes. The age of commencing, or only partially-established, puberty, is undoubtedly a common, though not a necessary predisposing element. The affection is very frequently hereditary, and is said to occur most frequently in towns, but one often encounters well-marked cases among country girls. In many instances we have no other known causes to guide us in treatment. There is sufficient evidence to show that whatever tends to deprave the nutrition of the body, in the way of deficient food, exercise, air, and light, or whatever tends to lower the nervous tone, in the way of mental anxiety, loss of rest, over-exertion, especially mental, abnormal sexual excitement, or the various troubles which the adolescent girl experiences at home, at school, or in society, may cause or promote the tendency to this affection. Their removal will at any rate materially aid in its cure, and their continuous existence will generally be found incompatible with this.

Treatment.—The treatment of chlorosis should, in the first instance, be attempted by prescribing the ordinary remedies for anemia, espe-

cially iron in its most assimilable forms, combined with attention to every hygienic error which can be ascertained and corrected, under the social conditions of the patient. In a certain number of cases a rapid cure is attainable by this means alone. We know not positively why arsenic or the salts of manganese succeed in many cases where iron fails, but this is so often the case in chlorosis, and the patients have so often tried the ferruginous treatment in vain before I am consulted, that I have got into the habit of prescribing one or both of these drugs from the first, in almost every case; and the rapid improvement which has often followed has, I believe, brought to me more *kudos* than any medication of a less empirical or more scientific character which I have pursued. The arsenic may either be prescribed as Fowler's solution, 3, gradually increased to 5 or 6, drops, in water, after a meal; or as arsenite of iron, gr. $\frac{1}{8}$ to gr. $\frac{1}{4}$, three times daily. The manganese should be given separately as the prepared black oxide, 10 to 20 grains in honey or syrup. The connection of chlorosis with diseases of the uterus must be carefully weighed. In the great majority of cases, local disease, such as catarrh of the uterus or vagina, or disordered menstruation, is the result, not the cause of the chlorotic state; but a vicious circle of causation may ensue, the catarrhal discharge, or over-abundant menstruation, becoming in its turn a source of weakness or impoverished blood. Moreover, when chlorosis occurs during married life, long subsequent to the full establishment of puberty, the hemorrhages or discharges, or perhaps even the nervous irritations caused by chronic endometritis, or ovarian diseases, ruptured cervix, or even ruptured perineum, may be the primary causes of the chlorosis, and their remedy, *secundum artem*, may prove the only efficient means of its cure. To the nature and treatment of such diseased conditions the remainder of this work will be mainly devoted. The form of acute chlorosis which occasionally follows the puerperal state is sometimes independent of severe losses of blood; and unless there are strong evidences of chronic metritis, or even when these are present, it must be considered as allied to, and demanding the same general treatment as the ordinary form which is met with during the first establishment of menstruation. The sun treatment of disease, that is, constant exposure in a semi-nude condition to the rays of the sun (Heliotherapy), carried on at Welles and some other parts of southern Europe, has been found beneficial in some otherwise intractable cases. In many instances a tolerably rapid cure of the condition is obtainable by a modification of Weir Mitchell's treatment. That is to say, the treatment, which I shall mention more fully by and by, may be employed, with the omission of the isolation and removal from home of the patient, which add so much to its difficulty and expense, but which are indispensable when it is carried out for the cure of more strictly nervous affections.

Neurasthenia.

I use this term here to express, as far as possible in one word, a very great variety of nervous phenomena which are certainly not confined to the female sex, but which are met with in that sex much more frequently and with more prominence than in the other. The condition is closely allied to, and in very many instances quite indistinguishable from that other vast group of symptoms which is usually designated by the term *hysteria*. Indeed, it is very doubtful whether even the typical paroxysm of hysteria, the *globus hystericus*, &c., are not mere manifestations of neurasthenia. Nor is the more chronic and continuous state of matters described as neurasthenia to be placed altogether in opposition to the more fitful and evanescent state of hysteria, for in each we may have cases of great evanescence of symptoms, and in each a more or less continuous state of nervous affection. The condition known as *hystero-epilepsy*, of which the student will find a most excellent description by Dr Mills in the *American Journal of Medical Science*, October, 1881, comes within the same category, and perhaps also some cases of epilepsy. At any rate, the remarks as to the treatment of one will apply equally to all, except in such cases as can be traced to a definite organic basis or anatomical lesion. The remarkable uniformity of symptoms observed by Charcot in hystero-epilepsy has hardly been met with in England, and I think is not likely to be until some experimenter can establish a vast clinique where full play can be given to the mimetic tendencies, or liability to be influenced by imitation, or association, or suggestions of ideas or actions, which is prevalent in all neurasthenic or hysterical patients.

Symptoms.—A state of great general debility is common to nearly all cases of neurasthenia, but this may show itself much more prominently in one or another direction. Inability for physical exertion of any kind, constant tiredness, may or may not be accompanied by inability for mental exertion, or what is very common, there may be paroxysmal exacerbations of the one form of exhaustion or the other, or certain acts of muscles, or certain kinds of brain work may be peculiarly affected. The loss of power of taking walking-exercise is the most common and early symptom, and local cramp, or utter general exhaustion, follow on attempts to enforce its practice. Feebleness of circulation is shown by cold extremities and cardiac disturbance. Sleeplessness is a common and distressing symptom. Morbid sensations, such as neuralgia of every kind, spinal tenderness at certain points, formication more rarely, and the like hyperæsthesiæ, are seldom absent. The patient becomes intensely hypochondriacal, exaggerates every symptom, and on the slightest

suggestion can be made to experience, imagine, or invent—it is often hard to say which—other symptoms. The want of exercise leads to dyspepsia, constipation, and similar disorders. Then follow in rapid train, in typical cases, the dreary round of hysterical inventions of any or every imaginable form of paralysis or spasm, tetany and epileptiform attacks included. Loss of appetite is usual, and may be carried to the extent of voluntary starvation. All the common symptoms of uterine or ovarian disease may be copied in perfection, or may be merely the exaggeration of a slight actual basis of fact. Emaciation, to an extreme extent generally, follows as a natural consequence, or if the patient retains a certain amount of fat it is accompanied by chlorosis or anemia. The emotional conditions commonly called hysterical may be present, or the patient may be simply sluggish, or, what is perhaps worst of all, most amiably and even religiously submissive to the aches and pains, or paralyzes and spasms, she is called on to endure. Slight degrees of this neurasthenic condition are very common in the female sex, but with a resolute will, the absence of injudicious punpering, and a little kindly but firm medical advice, they speedily pass away. The same remark applies to over-worked or self-indulgent males. A distinguishing feature in all these cases is that there is never any real loss of mobility or sensation—all the reflex phenomena of health, the “myotatic” contractions of Gowers, are easily elicited, and there is no change in the normal electric reactions. Recovery even in slight cases is usually slow, and relapses are common.

It is hardly necessary to speculate here as to the essential pathology of these cases, but everything seems to point to what we, in our ignorance, must term functional disease of the spinal and other nerve centres, as a leading factor. Anæmia of the brain or cord, with perhaps occasional hyperæmic ebbs and flows, must doubtless produce changes in their nutrition too minute for the anatomist to recognise, and to these we must look for an explanation of most of the leading symptoms.

Causation.—The period of puberty or adolescence is by far the most common time for the development of these symptoms, and one comes therefore to the conclusion that the mental and bodily changes then going on, are at any rate predisposing agents. Not a few cases, however, are met with in middle age, or at the climacteric period, while in old age they are exceedingly rare. Another strong predisposing element, one which I have seldom seen entirely absent, is the existence of a hereditary neurotic constitution, as evidenced by the occurrence of neuroses in other members of the family. A more immediately exciting causation is found in over-exertion, or prolonged emotion, or in circumstances violently affecting the passions. Although minor degrees of neurasthenia may have previously existed, the occurrence of the more striking

phenomena is almost always preceded by one of those causes. Physical over-fatigue is comparatively seldom the cause in the female sex unless combined with anxiety or care, as in long-continued nursing. Mental over-exertion, especially if experienced during the menstrual periods, is, on the other hand, a too common factor. That sexual excitement, whether suppressed or unduly fostered, is occasionally a cause is absolutely certain. The reticence of the sex on such subjects renders it impossible to say how often this is the case. That the nervous and vascular general and local changes accompanying ovulation and menstruation are often strongly causative may be safely assumed, but I would earnestly caution the young practitioner against assuming too freely that there is always a corresponding or accompanying erotic tendency. Mal nutrition, in nearly every case, plays a part in the causation sooner or later, whether it is due to insufficiency, or improper character, or faulty digestion of the food; and almost any departure from strict hygienic laws tends in the same direction. There is nothing which produces such baneful effects in this affection, whether as a primary cause or a fertile aggravation of the symptoms, as the injudicious sympathy of friends or relations, or even medical advisers. Let a young girl, or a young man either, fall into the hands of a fond mother or other relative, who makes it the business of her life to minister to every little want, to magnify every little ache or pain, or to call them into existence by her inquiries and suggestions, and the patient may safely be pronounced a hopeless invalid till he or she is rescued from such unfortunate surroundings. One cannot cure these ministering angels, as the patient is apt to consider them, of their mischievous, though well meant practices.

The most important question with regard to causation remains for consideration. How far is uterine, or ovarian, or pelvic disease to be considered as a predominant cause of this neurasthenic state? Few cases continue long without some manifestations of apparent uterine disease, and there are not many in which, after a time at any rate, physical signs of uterine versions or flexions, of chronic metritis or vaginal catarrh, or of other gynec disorders, are not encountered. By the time the patient has run the gauntlet of several physicians, and has reached the gynecologist, this is almost sure to be the case, and the attention of her friends and herself will probably have become riveted upon these symptoms. Now, that real uterine or pelvic disease may be the starting-point, I have no manner of doubt. Its symptoms and signs may have been present long before there were other symptoms of general neurasthenia, the continued reflex irritation of the spinal and sympathetic nervous system, and the impoverishment of blood thus brought about may be the main etiological factor, and the cure of the local affection may produce a speedy improvement, easily followed up to complete

recovery by simple hygienic means. All this *may* be, and occasionally is, the case. It is the duty of the shrewd physician to put together the history of the various symptoms without bias, and to make sure that he can speedily alleviate the local malady, before he attempts to treat the case from this direction. But for the most part, and especially in the instance of young or unmarried women, the relations of cause and effect are precisely the reverse. It is the anæmic or neurasthenic condition which gives rise to local pelvic congestions, to catarrhal discharges from uterus or vagina, to consequent displacements of the uterus even, and to the multiplicity of ovarian, uterine, or pelvic aches and pains. I cannot better illustrate this than by a quotation from Dr Goodell (*op. cit.*, p. 398). "Take, for instance, this too common picture from life. A girl who entered puberty in blooming health, and without an ache, is over-tasked and over-taxed at school, and her health begins to fail. She loses her appetite and grows pale and weak. She has cold feet, blue finger nails, and complains of an infra-mammary pain. Headache, and back-ache, and spine-ache, and an oppressive sense of exhaustion distress her. Her catamenia, hitherto without suffering, now begin to annoy her more and more, until they become extremely painful, and at these times dark circles appear under her eyes. Her linen is stained by an exhausting leucorrhœa, and bladder troubles soon set in. She is wearied beyond measure by the slightest mental or physical exertion; a grasshopper is a burden to her, and she finally becomes hysterical. Now, very unfortunately, the idea attached to this group of symptoms is that the reproductive organs are at fault, and that the unit of resistance lies in the womb. A moral rape is therefore committed by a digital or a speculum examination, and two lesions will be found. Firstly, as a matter of course, a vaginal anteversion, and, secondly, an endometritis. These are at once seized upon as the prime factors, and she is accordingly subjected to a painful, an unnerving, and a humiliating local treatment. Unimproved, she drags herself from one consulting room to another, until finally, in despair, she settles down to a sofa in a darkened room, and lapses into hopeless invalidism."

I wish I could continue the quotation, but what I have already given should be engraven on the memory of the young practitioner before he enters further on the study of the local disorders of women. Not a few of the cases in which it is the fashion now-a-days to excise the ovaries are of this class, and might be cured, at any rate in their earlier stages, by hygienic means.

Diagnosis.—Neurasthenia, in ordinary cases, is easily recognised by the symptoms given above, and especially by the fact that the numerous subjective phenomena are found, on careful examination, to be unaccompanied by objective signs. It is chiefly with tubercles, or myelitis, or

sclerosis of the cord, or other organic spinal or cerebral affections that it may be confounded, when pseudo-paralytic, or spasmodic, or convulsive phenomena become developed in its course. I have known very clear-headed physicians deceived in this way, and if I have rarely, though not without exception, been so myself, in the case of females, it is due solely to the fact that where doubt existed, I have ever placed reliance on the age, sex, and surroundings of the patient, on the occurrence of uterine phenomena, and on the other points which have rendered the diagnosis of neurasthenia probable, even when they conflicted with much of the evidence derivable from modern methods of investigating nervous and muscular lesions.

Treatment.—The treatment of neurasthenia mainly consists in removing its causes when they can be ascertained. Rest is an important element in all cases, rest from brain work, from wearing anxieties, and from physical exercises beyond the strength of the patient. It is, however, occasionally a most difficult task to determine when a certain amount of enforced exercise is likely to be more serviceable than absolute rest. I cannot on this point do better than quote from Dr Weir Mitchell (*Fat and Blood*, Lippincott & Co., 1884, third edition):—“Sometimes the question is easy to settle. If you find a woman who is in good state as to colour and flesh, and who is always able to do what it pleases her to do, and who is tired by what does not please her, that is a woman to order out of bed and to control with a firm and steady will. That is a woman who is to be made to walk, with no regard to her aches, and to be made to persist until exertion ceases to give rise to the mimicry of fatigue. . . . There are still other cases in which the same mischievous tendencies to repose, to endless tire, to hysterical symptoms, and to emotional displays, have grown out of defects of nutrition so distinct that no man ought to think for these of mere exertion as a sole means of cure. The time comes for that, but it should not come until entire rest has been used, with other means, to fit them for making use of their muscles. . . . But between these two classes lies the larger number of such cases, giving us every kind of real and imagined symptoms, and dreadfully well fitted to puzzle the most competent physician. As a rule, no harm is done by rest, even in such people as give no doubts about whether it is or is not well for them to exert themselves. . . . I do not think it easy to make a mistake in this matter unless the woman takes with morbid delight to the system of enforced rest, and unless the doctor is a person of feeble will, . . . and the man who resolves to send a nervous woman to bed must be quite sure that she will obey him when the time comes for her to get up again.” The degree of mental work permissible must be decided in each case on almost precisely similar principles. Of course

the period of rest must be utilised to the fullest extent in improving the nutrition of the patient.

The utmost attention must be paid to securing a plentiful supply of wholesome food, such as the stomach will digest, and iron, arsenic, or manganese have here their fitting place. The moderate and judicious use of hydrotherapy suits some cases remarkably well, but early hours, plentiful and regular meals, and very mild amusement, form a part of this treatment. I have already said enough as to the place which special uterine medication occupies in the treatment of these cases.

In very many, separation from unwholesome influences and surroundings, with the hygienic regimen which will suggest itself to every physician who understands the true nature of the case, will suffice for a cure, if sufficiently prolonged. But in aggravated cases, nothing has been suggested of more value than the combination of several indications in one routine system proposed by Dr Weir Mitchell.

It is almost impossible, in the few sentences at my command, to convey the full drift of this combination, in one systematic course of treatment, of these separate remedial factors—absolute mental and bodily rest, systematic and successful rapid nutrition of the tissues, utilisation of the large quantities of food given for nutritive purposes, and prevention of its otherwise deleterious consequences, by systematic rubbing and electricity, together with perfect seclusion of the patient from all influences but those of her medical adviser and trained attendants. Every practitioner who has an extreme case in charge should carefully study Dr Mitchell's book for himself, and decide how far the circumstances of the patient permit of the adoption of its recommendations. The absolute rest is necessary for a time, varying in different individuals, to reduce the frequency of cardiac action, to calm the nervous system, and avoid all tissue changes in excess of what are absolutely required. The feeding is conducted mainly by administering gradually increased quantities of skimmed milk, with the addition, from time to time, of other articles of diet, until enormous quantities of food are consumed with avidity. The patient gains fat and blood, and increases in weight, in an incredibly short space of time, while the accumulation of waste products in the system, and injury to digestion, are prevented by daily *massage*, or scientific kneading of the whole surface, and to some extent by the application of the Faradic current to the muscles. The necessary seclusion can only be secured by removal to an establishment where every detail ordered will be rigorously enforced. I could add several to the list of apparently almost miraculous cures, related by Mitchell and others, of seemingly hopelessly paralytic invalids, or of those

in whom muscular, and nervous, and mental power were at the lowest possible ebb.¹

There are, however, several drawbacks which have to be somehow overcome, or they will prove prohibitive of the whole system of treatment to large numbers of suitable cases. Having so strongly recommended a perusal of Dr Mitchell's original work, I think it is more profitable to mention these drawbacks than to dilate further on its details.

The expense necessarily entailed by separate board and lodging, with skilled attendance, and *massage*, and proper medical supervision, is great, and the six or seven weeks which are necessary, to set the patient fairly on her legs again involve an outlay of from £40 to £60 at least. It is doubtless well spent money for those who have got it, and true economy in the long run. Fortunately these cases are much less common in a severe form among the poor, a proof of how predominating is the influence of mental over physical causation, and of the deleterious influence of luxurious coddling and pampering. But they do occur, and occasionally bring ruin to a poor and worthy family, every farthing beyond what is imperatively required otherwise going to comfort the helpless and exacting member. It would be an interesting fact to determine how many chronic invalids are found in our workhouses who might have been saved by a few weeks' proper treatment, or who might yet be saved, and what would be the comparative cost to the community of curing or permanently housing them. Another great difficulty lies in obtaining the consent of the friends or of the patient to the necessary separation. A little tact will almost always persuade the latter, but the former can hardly be made to see that their fond care and attention are the most deleterious influences surrounding the case. They fight for modifications of the seclusion, which would render it totally ineffectual, and only the gradual increase in the symptoms at last overcomes their scruples. Time and familiarity with effective cures thus brought about will tend to diminish this difficulty. Another difficulty, not an imaginary one, lies in the fact that the treatment is almost necessarily removed from the hands of the ordinary practitioner to a stranger. The patient and her friends feel this, if they have confidence in a long-tried friend and adviser, and it is only human nature to suppose that he may occasionally resent it himself. Yet in many cases the patient has got beyond his power of efficient control, by too long sympathetic association, and a change is absolutely required. It is hardly the fault of the doctor, for in many instances a mere exchange of advisers between two cases would do all that was necessary. This obstacle will be difficult to overcome in the country, but I have found no difficulty in arranging for

¹ Dr Playfair of London and Dr Little of Bearhydding were among the first to adopt this treatment fully in England.

the necessary treatment in Manchester, at Mrs Allsop's excellent nursing home, under my own supervision, or that of any other practitioner, and probably most large cities will afford similar opportunities. Before undertaking the systematic treatment of such a case, previously under his own care, the practitioner should, however, feel very sure indeed that he holds the reins firmly, and that the steed has never got the bit between her teeth, as far as his driving is concerned. If he is in error here, a lamentable failure will result, and the plan of treatment, and the practitioner himself, will be greatly discredited. One thing is absolutely necessary, if medical men are to be expected, at their own temporary loss, and with much risk of offending and alienating the friends of the patient, to urge this system of treatment in suitable cases, there must be no quackery at the establishments selected. The patient goes there on the advice and responsibility of her own medical adviser, who deserves therefore the credit of success, or at any rate should fairly divide it with the temporary executor. I am sorry to say that this has not always been the case, and that I have known very great self-exaltation claimed, and widely admitted, in favour of the directing physician, and at the expense of the physician to whose skill in diagnosis, thorough appreciation of the treatment, and unselfish zeal in insisting on its adoption, the patient owed her delivery from social death.

My colleague, Dr Ross, has two admirable chapters on cerebral and spinal neurasthenia, as observed chiefly in the male subject (*Diseases of the Nervous System*). At first glance there would appear to exist a much greater difference between the symptoms observed in the male and the female, than is evident on further study. Paresis is more common in the female, numbness and pain in the male. The change of life is perhaps the more common factor in the male, and puberty in the female, but with many exceptions. In the middle aged man we are not so apt to attribute his varied repertorium of symptoms to fancy, caprice, or even untruthfulness, as in the hysterical girl—a fact which should make us more lenient in our judgment of the latter. On the other hand, we have just sufficient cases, in the young adolescent male, of utter temporary abandonment to the highest degrees of distorted will and moral nature, of false paralysis, and of convulsive tetany, to show us the intrinsic similarity of the affection in both sexes, modified by the special surroundings of each. Dr Ross and I have recently treated together a most remarkable case of the kind in a young man, and we both, I think, were much impressed with the idea that it is a fortunate circumstance, as far as treatment is concerned, that these cases of great neurasthenia in the young do occur so much less frequently in the male. I am pleased to note that so competent an authority attaches an importance to the Weir Mitchell treatment, precisely corresponding to what I have above expressed.

CHAPTER V.

DISEASES OF THE VAGINA. Vaginitis, Acute and Chronic. Leucorrhœa. Tumors and Growths. Foreign Bodies. Wounds, Ulceration, and Fistule. Occlusion. Prolapse.

AFTER the digression of the two preceding chapters, the diseases of the vagina follow next in natural order to those of the vulva. In many instances their pathological characters and their treatment are so similar as to require little more than recapitulation, and in not a few cases the maladies of the one region are simple extensions by contiguity from the other. In acute inflammatory affections of the vagina the introduction of the speculum can hardly be borne, and certainly the smallest sized tubular instrument is often the best for ascertaining the general state of the walls and their secretions: but when small areas of dis-

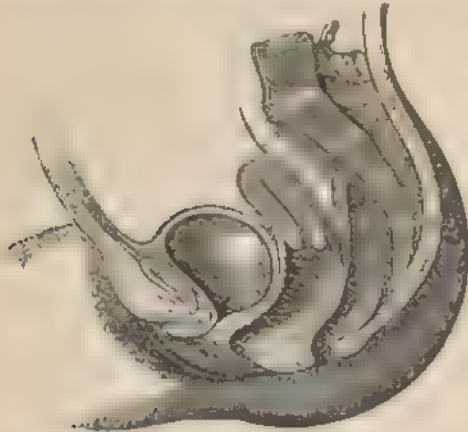


FIG. 69. The Pelvic Viscera in Profile (Houston).

ease, such as fistule, have to be searched for, and still more when they have to be operated upon, the duck-bill becomes indispensable, and such an instrument as that of Seanzoni (fig. 16) may be of service. A duck-bill speculum with a long, wide fenestra in its blade is also serviceable for examining or operating on small fistule or excrescences of the posterior vaginal wall.

There are two ways of describing the vagina. According to the one, it is a musculo-membranous tube, more or less cylindrical in form, though compressed, and extending from the vulva obliquely through the pelvis, till it embraces the cervix uteri. This idea is typically shown in Houston's well-known and often-copied diagram (fig. 69), and in the more recent and carefully-executed drawings of Sappey. According to the other, "the vagina is a mere slit in the pelvic floor, although it is often erroneously described as a tube or cavity." This is shown in Hart's

drawing (fig. 70), and it is, anatomically speaking, the more correct estimate of what we find in the healthy virgin female. It is very desirable that the student of gynecology should not fail to realize this fact. At the same time the vagina is, embryologically, a part of the genital tube or canal, and, in its physiological aspects, in copulation, parturition, and even menstruation, it plays the part of a tube; and in describing its ailments or their treatment, it is almost impossible to use language which does



FIG. 70. Vertical Section of the Vagina (Hart). *u.*, urethra, *v.*, vagina, *a.f.*, anterior lip of cervix, *p.f.*, posterior lip, *o.u.*, os uteri externum, *p.*, perineal body.

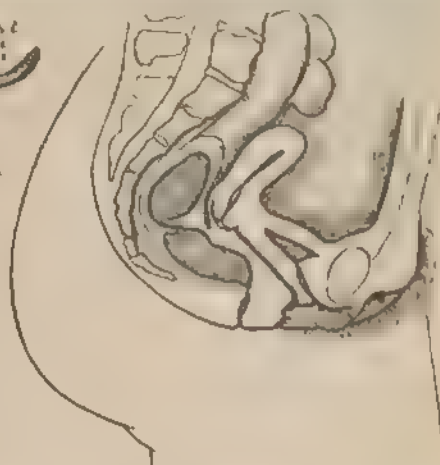


FIG. 71. Section of Pelvis (Ranney-Foster).

not fall in with this conception. Specula, even the duck bill, dilators, and many other instruments, are all made and used with this conception in view; and I see no harm in it, if one does not forget the one form of truth, while acting upon the other. Ranney's diagram (fig. 71), modified from Foster, shows very clearly the true relation of the canal to surrounding parts.

Acute Vaginitis.

Acute inflammation of the vagina—vaginitis, colpitis, or erythrits—is, like acute vulvitis, very frequently the result of gonorrhœa, but it may also arise from other causes, and there is the same difficulty in differentiating between the specific and non-specific forms. The suddenness of the attack, its acuteness, the urethral and vulvar involvement, the labial œdema, are all characteristic of the gonorrhœal form, but they are never absolutely conclusive. True gonorrhœal vaginitis may affect only the

lower part of the vagina, but there are cases also where it affects only the upper part. Even the occurrence of apparently gonorrhœal infection of the male is not certain proof of gonorrhœa in the female, for purulent discharges of a non-specific character in the female may produce in the male an affection hardly to be distinguished from gonorrhœa, except perhaps by its milder character and amenability to treatment.

Causes.—Any traumatic injury, surgical operations, too strong injections, or medicated pessaries, irritating uterine discharges, diabetic urine, cold, especially during a menstrual period, or after delivery or miscarriage; the exanthematous fevers; badly-fitting uterine supports, or their too prolonged retention, have each occasionally figured as exciting causes of acute non-specific vaginitis.

The symptoms are those of mucous inflammations generally—heavy, dull, aching pain, or smarting—with tenesmus, “bearing down,” spasm of the sphincters of the vulva, anus, or bladder, frequently accompanied, at the outset, by sharp fever, the parts being acutely painful to touch. The mucous membrane is at first red and velvety, perhaps bleeding easily on touch; the secretion is primarily diminished, but soon becomes increased, the whole affected surface being covered with pus or muco-pus. This secretion is acid, and sometimes very offensive. The squamous epithelium is shed in large quantities and washed away with the discharge, so that rawness occurs, and adhesions may take place between opposite surfaces, or between the cervix uteri and vaginal wall. In old people these attacks, by their frequent subacute occurrence, tend to cause contraction of the vagina.

The acute form may end in resolution in a few days, or a week or two, or it may subside into the chronic form, giving rise to endless trouble. There is the same danger as in vulvitis of extension to the bladder, to the inguinal glands in the form of bubo, or to the uterus, Fallopian tubes, or ovaries. Such extensions may give rise to inflammation of these organs, with subsequent abscess or strictures, and consequent sterility, peritonitis, or death. This last result, fortunately rare, may occur from the extension of very subacute or even chronic forms. We have also, in vaginitis, a granular form of the disease, due to the affection mainly of the small vaginal papillæ; indeed, some measure of this is usually seen at the commencement, and, much more rarely, there occur minute pustules, as if the affection involved a glandular rather than a papillary element. Gangrenous cases are also reported, where the vaginal sheath, including the muscular tissue, has come away as a sloughing cast, recovery depending on how far the parts below are affected. These casts must not be mistaken for mere epithelial exfoliations, which, in a more or less complete form, are frequently thrown off when there is but little local inflammation or constitutional disturbance.

True diphtheria, of zymotic origin, is sometimes met with, as on the vulva; and Schroeder, and others, describe a croupous condition dependent on local irritants, such as urinary fistulae. What I have seen under these circumstances was a mixture of epithelium, pus, and urinary salts. Matthews Duncan mentions a rare form of vaginitis, *v. emphysematosa*, where the surface of the vagina is covered with minute air vesicles; other writers have described them as present in the cellular tissue beneath, but one would in that case expect more extensive spreading of the emphysema.

In children, there is the same necessity for remembering the danger of false accusations as in the case of vulvitis, but vaginitis is rare in children, while vulvitis is common, and in the adult, vulvitis, apart from vaginitis, is comparatively rare.

The treatment, when the affection is in its acute stage, should be by complete rest, combined with cooling aperients, antiphlogistic regimen, and avoidance of stimulants. The best local application at first is the injection of warm water, either medicated with laudanum and borax, or acetate of lead, or used alone. The water should be as warm as it can be quite agreeably borne. But there is a certain amount of danger in all injections during vaginitis, owing to the possibility of their washing the secretions into the uterus, and for this reason they should be given slowly, and it should be seen that there is free exit at the vulva. A rectal suppository of morph. acet. (gr. $\frac{1}{4}$ ad. $\frac{1}{2}$) and ext. belladon. (gr. ii.), night and morning, gives great relief. Various demulcents, slippery elm, marsh-mallow, &c., may be substituted for the above watery injections. As the more acute stage subsides, more stimulating applications become desirable, such as boracic acid, salicylic acid (R. acid. salicylic. \mathfrak{ss} ., sod. bicarb. \mathfrak{ss} ., aqua \mathfrak{ss} ., after effervescence ceases, filter, and add a pint of water), or carbolic acid (1 in 60, to 1 in 20). Nitrate of silver (gr. xv. ad. \mathfrak{ss} .) is not infrequently applied to the surface with a brush, through the speculum, but my experience of it at this stage is unfavourable. A further stage of subsidence being reached, the numerous class of astringents comes into use, and these must be relied on more and more as the disease tends to the chronic form. Alum is the most popular of these (℥i. \mathfrak{ss} ad. O*z*.), but it is apt to cause very disagreeable curdling of the secretions. The boracic and salicylic acid injections are still useful, and sulphate of copper (gr. xx.), acetate of lead (\mathfrak{ss} .), acetate of zinc (gr. xx.), sulpho-carbolate of zinc (gr. xxx.), and sulphate of zinc (gr. xxx. to the pint), are all of value in turn, for they must be frequently changed, rather than increased too much in strength. The list of astringent or antiseptic substances which it has occurred to various authorities to use is of indefinite length. Sims's vaginal glass dilator (fig. 35) has been recommended to be worn, in order to keep asunder the

inflamed surfaces. I have found it badly borne in cases where it was most required, and would reserve it for the most chronic forms, when there is danger of adhesions. Emmet's plan of filling the vagina with hot water, while the lips are raised, though invaluable, as we have seen, in certain uterine and pelvic affections, is dangerous in vaginitis, its object being to throw the fluid backwards, and fully distend the vagina, which might favour extension of the disease. When all febrile symptoms have abated, Edis's plan of injecting through a speculum the glycerole of carbolic acid, 1 in 4, or P. B. strength, often produces a very good effect, especially in the persistent granular form. It requires a little care, and should be retained for a few hours by a tampon soaked in oil, and then gently syringed away. Otherwise, I do not like the use of medicated plugs for vaginitis. They are apt to be irritating and offensive. The internal remedies—copaiba, cubebs, and sandal wood oil—are just as effective or ineffective in the non-specific as in the specific forms. In the more chronic cases the patience of physician and patient is sorely tried, but the frequent change of these astringent and other local remedies must be continued. I will only add to the number the solution of permanganate of potash (gr. $\frac{1}{2}$, and upwards, to the ounce), and a soothing mixture of bismuth in glycerine (gr. xx.-xxx. ad. i.), to be applied with a brush.

Acute vaginitis has been considered, so far, mainly as a local affection; but undoubtedly many cases, though less frequently than with the chronic form, depend entirely on constitutional states which demand our first attention. Among these we may reckon the cases occurring during the exanthematic fevers, or in the depressed constitutional state due to chronic alcoholism, struma, tuberculosis, diabetes, &c. No local treatment avails much while these conditions are unchanged, and their complete or partial removal often acts as a charm on the local affection.

Chronic Vaginitis (*Vaginal Catarrh*, or *Vaginal Leucorrhœa*).

Chronic vaginitis, as a mere stage of the acute form, need not further detain us. But it is, for practical purposes, advisable to speak of that condition of chronic purulent or mucopurulent discharge which is often a sequel of acute vaginitis, but more often commences with little or no febrile disturbance, and creeps on imperceptibly. Clinically we can make no distinction between chronic vaginitis, vaginal catarrh, and vaginal leucorrhœa.

The causes, as with all other catarrhal affections, are innumerable. Constitutionally, we have damp, or hot, or very cold climates, anæmia,

struma, gout, chronic alcoholism, mental or bodily over work, and the thousand-and-one other causes which depress the vital powers. Locally, we have want of cleanliness, local irritation from frequent coitus, abuse of pessaries, tampons, or other local applications, extensions from the uterus or vulva, uterine displacements, and pelvic diseases. In fact everything that debilitates the system, or irritates the vagina, or congests the pelvis, may show itself by the presence of vaginal leucorrhœa. It may last for weeks, or months, or a life time, with occasional exacerbations or remissions, but that which follows as a sequel to gonorrhœa is especially intractable. In 1873, Dr Noeggerath published a remarkable paper,¹ in which he showed, to his own satisfaction, that it was hardly possible for a woman in New York to escape infection from gleet after marriage, and that it was almost equally certain that, once infected, she must sooner or later become the subject of incurable chronic uterine, ovarian, or pelvic disease. At the annual meeting of the British Medical Association in 1876, I read a short paper,² in which I endeavoured to disprove the existence of this very alarming state of matters as regards the community here; but the baneful effects of chronic gleet in the male, transmitted to the female after marriage, are nevertheless serious and frequent enough.

Symptoms. Every patient who suffers from vaginal catarrh or leucorrhœa suffers sooner or later from back-ache, pelvic discomforts, and symptoms of anaemia or general weakness, but these symptoms, even when combined with the characteristic flow, can never be considered as pathognomonic of this affection alone. They may for a time be relied on in the young, but if not speedily subdued, should lead to local examination. I have elsewhere (p. 33) mentioned the characters which differentiate uterine from vaginal leucorrhœal discharges.

The purulent secretion in vaginal catarrh is mixed in various proportions with the vaginal mucus and tessellated epithelium, and is nearly always acid, the action of the acid upon the spermatozoon being a not infrequent cause of sterility. This partly accounts for the well known infecundity of prostitutes, although that is also partly due to more serious changes in the ovaries and Fallopian tubes, the result of gonorrhœal extension.

Treatment. I have already indicated fully enough the means of local treatment by astringent or antiseptic applications. But the remedy of constitutional causes at work must, in the chronic form, chiefly demand attention, and in many instances, in very young girls, for instance, to the total exclusion of local measures. I should not, however, omit to mention that alkaline injections may be occasionally substituted for astringents

¹ *Die Latente Gonorrhœe im Weiblichen Geschlecht.* Bonn.

² *Brit. Med. Jour.*, 1877, vol. 1, p. 269.

with great advantage, either as weak solutions of the alkaline carbonates, or as mineral waters used at their place of origin.

The over-grown or over-worked young school-girl is as much a victim to chronic vaginal leucorrhœa as the too-frequently parturient woman, and there is often a vicious circle of causation. Anæmia, or debility in some form, causes leucorrhœa, and leucorrhœa adds to anæmia or debility, and there can be little doubt as to which end of the chain should be cut. Local applications must give place, until it is found impossible to do without them, to iron, strychnia, cod liver oil, phosphates, and attention to the action of the bowels and skin. But even these will do little without good, plain, nourishing food at regular hours, early retirement to bed, out-door exercise, avoidance of mental or physical stimulants, and carefully-considered changes of climate for those who can afford them. It should be remembered by every mother, that, in the case of her growing daughters, leucorrhœa may lay the seeds of many future troubles dependent on pelvic relaxation; and, still more important, that it means in every case something wrong with the hygienic condition, which may or may not be capable of removal. The conditions of food, air, sleep, exercise, and clothing, must be referred to her medical adviser, and his advice must be followed as closely as possible. If of the poorer classes, she must see what can be done to alleviate her daughter's hours and conditions of work; if of the middle class, she must not allow her, except under dire necessity, to emulate the system of *cram* which is sapping the health of our young men who aim at professional life in this country. When the profession of teaching, as now conducted, lies before a young woman, I feel powerless to advise; we must look at it as we do at other unhealthy occupations which are to be followed for the good of the community, and mitigate its dangers as we can. But in all other cases, the highest possible education of woman is only attainable by the prolongation of the period of girlhood, and is irretrievably injured by ignoring the physical necessities for rest and relaxation which the period of adolescence in woman demands.

Tumours or Morbid Growths.

CANCER.

Cancer of the vagina is not often met with as a primary affection. It is more frequently an extension from the vulva or the uterus. Epithelioma is undoubtedly the most common form, although infiltration downwards of other forms is encountered. The original site is, however, sometimes in the vagina itself, the disease assuming the soft papillomatous form; but it is necessary to remember that in the vaginal wall, as

on the cervix uteri, red papillomatous growths are sometimes, though rarely, seen, which to the eye may seem malignant, but which do not appear to have any histological characters of malignancy, and which do not return after removal. Sarcoma must be excessively rare, except as an extension from the uterus.

Symptoms. Pain, hæmorrhage, and foetid discharge, characterise vaginal cancer, as they do cancer in other parts of the genital tract. Nothing but inspection, however, can make its existence certain.

The same remarks as to *treatment* apply here as in the case of cancer of the vulva (p. 46). If there is any possibility of getting beyond the boundaries of the disease with safety, immediate removal by cautery, knife, cauteriser, or escharotics, is desirable. If large bleeding excrescences exist, they may be scraped off, and their site treated with one of the strong escharotics, with the hope of temporarily alleviating symptoms; and such relief often lasts much longer than might be expected. When the disease goes on continuously, especially that form which consists of infiltration from above, and the patient survives long enough, perforation of the septa between the vagina and bladder or rectum sooner or later takes place, and fistulous openings are formed, which are, of course, not amenable to surgical repair. There can hardly be imagined any form of more utter misery than that which is thus caused, and if ever "euthanasia" were allowable, it would be in such cases. Opium and skilled nursing are our only resources. In some cases of malignant rectal fistula, left lumbar colotomy has been performed with considerable temporary relief.

CYSTS.

Cysts of the vagina, like those of the vulva, have various origins. In some instances they may commence as small extravasations or thrombi; in others they are due to the occlusion of normal ducts, and retention of their contents, which are more or less changed.

The presence of follicles in the vagina is denied by some, while most writers unhesitatingly speak of them as sources of cystic growths. The canals of Gartner, also, or rudiments of the original Wolffian bodies, are mentioned as not infrequently the origin of cysts; but inasmuch as these rudimentary structures are rarely to be found at all in any other form, this would appear to be at least problematical. The glands of Bartholinus, when their ducts are occluded, may enlarge upwards, and so appear as vaginal rather than vulvar cysts. Occasionally, cysts are developed on the surface of the lower part of the vagina, varying much in strength and thickness of wall, and these may become so pedunculated as to be described as hollow vaginal polypi.

Symptoms. Small vaginal cysts may be discovered by accident only; but when they acquire notable size, they give rise to considerable

irritation and vaginal catarrh, and occasionally to hemorrhages. They may completely block up the passage, so as to prevent or impede urination, coitus, or delivery. Mistakes, and very important ones, have been made in the way of *diagnosis*. These have arisen from forgetfulness that any part of the vaginal wall itself may bulge forth, and that the soft tumour thus produced contains, not a cyst, but a hernial sac of bladder or rectum, or even, though rarely, of Douglas's peritoneal pouch, with some of the softer contents which we have noted (p. 7) as sometimes occupying it. All such hernial protrusions of the vagina—cystocele, rectocele, enterocele, &c.—can, with a little care, be easily replaced, though they may speedily return; and there is no true fluctuation to be obtained in them. Such mistakes in diagnosis must imply carelessness rather than want of knowledge.

As regards *treatment*, puncture, and removal of the contents by aspirator, is nearly always the first resource. Refilling may not take place, but it usually does, so that it is advisable, if the boundaries of the cyst can be made out, to remove a small portion of the wall, and by iodine or carbolic injections to prevent refilling, and promote healing with as little suppuration as possible. In deeply seated cysts, the aspirator should always be tried first. Complete removal of the cyst wall by dissection is seldom possible, unless it is small and superficial.

SOLID TUMOURS.

These are much more rare in the vaginal wall than cystic growths, but fibroids (fibromyomata), similar to those of the uterus, and even solid sarcomata, have been described. The extirpation of such growths, unless small or pedunculated, would be a formidable matter, and would require special study in each individual case. I have only met, five years ago, with one example, which I believed to be a fibroid, nearly as large as a hen's egg, in the posterior wall. It certainly was very hard, it was not in Douglas's pouch, nor in the rectum, and it had no connection with the uterus. I let it alone, and I feel sure that if it had given subsequent trouble I should have heard of it.

TERRUCULAR DEPOSITS.

These may just be mentioned as occurring, very rarely, in the vaginal wall, in conjunction with similar deposits elsewhere; and, once for all, I may say that I make no pretence, in a work of this kind, to mention every rare pathological curiosity, which a diligent search amongst authorities could unearth. There is such a thing as perspective, applicable to the relation of clinical facts, otherwise the well-known plan of the writer on Chinese metaphysics might be adopted, look up the names of all the organs of

the body, then the titles of every form of neo-plasm, add the two ingredients, and the description would be complete.

Foreign Bodies.

At one time I frequently had difficulty in removing pessaries from the vagina, and this was due to the common use of hard wooden balls or ovals for the purpose of supporting the uterus. The strings attached to them rotted away, the balls perhaps gave rise to no immediate discomfort, and in elderly women might remain for many years. Sooner or later, however, ulceration, or great irritation, and vaginitis, came on, especially if the pessaries were crusted with urinary salts. Deep ulceration sometimes invaded the bladder or rectum, but this accident is quite as likely to occur from the neglect of a much more scientific instrument, the Hodge pessary. No one should ever introduce one of these, or indeed any kind of pessary, without warning the patient that every now and again, or on the occurrence of any unusual discomfort, the instrument should be seen to by a competent practitioner. For the extraction of these balls, which happily I now rarely see, a small, straight midwifery forceps was often necessary, there was no other way of seizing the rotatory substance. Sometimes, from long-continued vaginitis, the canal below them had contracted very much, and great care was required in extraction. Other bodies have been found, from time to time, introduced into the vagina, either maliciously or by the patient herself. A very long list of such articles might be culled from the medical journals, varying from pewter pots (*Lancet*, 1848, i. 313) to pins. Poisoning, also, has been attempted, and executed, through this channel; but this hardly comes within our domain. No special rules can be laid down for the removal of such miscellaneous articles. Anaesthesia will often be required for the diagnosis of their shape and relations, and if projecting parts oppose themselves to extraction, they must either be broken by bone forceps and removed separately, or the whole must be turned into a more favourable position. Tact, patience, gentleness, and common sense are much needed, especially when the offending body is of glass or crockery.

Wounds, Ulcerations, and Fistulæ.

WOUNDS.

Wounds of the vagina, not due to labour or to some operative proceeding, are by no means common, yet they sometimes occur as the result of accident or wilful injury. Thus the pitchfork in the hayfield,

the goading of a bull, sitting upon cracked pottery, the breaking of a glass syringe, wilful stabbing or kicking, rude attempts at criminal abortion, or even a sudden fall, have all been known to produce rupture of the vagina. If the rent is considerable, the danger from hæmorrhage is great, and, indeed, very small wounds of the lower part may give rise to speedily fatal results. If the instrument penetrates beyond the walls, we have the further danger of ruptured or prolapsed intestine. The treatment of such wounds requires the use of ordinary surgical means. The edges are to be brought together while fresh, and united by the instruments and means which are applicable to the treatment of fistulæ. In case of hæmorrhage, pressure may be made on the lower parts of the vagina by the solid plug of Sims's glass dilator, but not, of course, if there is danger of internal bleeding. Great care must be taken to look for and examine any protrusion, and to return it if uninjured; but if serious rupture of bowel has taken place, or if there is reason to think this highly probable, the surgeon should not hesitate to open the abdominal cavity, and, with all antiseptic care, to search for the rupture, and repair it by gut sutures, while carefully removing from the peritoneum every vestige of escaped fecal matter. There is a great future for abdominal surgery on the lines so admirably portrayed by Marion Sims in a series of articles in the *Brit. Med. Jour.* for 1881, vol. ii. The great fear is that "fools may rush where angels fear to tread," and bring into discredit, for a time, what promises to confer so much benefit on mankind.

ULCERATIONS.

Ulceration of the vagina, from cancer or other causes, has been already casually referred to. When the disease is inevitably progressive, there is, of course, nothing to be done in the way of repair; when such is not the case, as in ulcerations after delivery, openings occur into the surrounding hollow viscera, and the whole matter will be best considered under the heading *Fistulæ*.

FISTULÆ.

Causes.—These may result from clean wounds, such as have been mentioned above, rarely so, however, if they have been under skilful treatment from the first. Malignant fistulæ may be dismissed at once as beyond the reach of art. Abscess in the pelvic cellular tissues may, by burrowing in two directions, connect the vagina with the bladder, the rectum, or the perineum; and the same may be said of those extravasations of blood already described as thrombi, or afterwards to be spoken of as pelvic hæmatocele, but only in the event of their suppurating. The ulceration produced by a pessary or other long-retained foreign

body in the vagina may lay open the rectum or bladder. Syphilitic sores may also perforate the vaginal wall, but it is usually the urethra that is thus entered. Ulcerative perforation of the vagina may also occur from without, as from the presence of a hair pin, or a calculus, in the bladder; and foreign bodies in the rectum, even hardened feces, may produce the same result. Chronic vesical ulceration, without any foreign irritant, has been traced in some instances as a cause of vesico-vaginal fistula (*Lancet*, 1870, n. 738). Artificial fistula has also been advocated and performed by Bozemann, Emmet, and others, for the cure of some vesical affections (*see* Chap. XXI.). Sloughing of the vagina, with subsequent fistula, in the course of eruptive fevers, has also occurred; and, as we shall see shortly, congenital malformations may also cause communications between the various pelvic viscera, which, if they do not produce one great common cloaca, may be so limited in area as to be regarded and treated as fistulae.

But all these causes put together, except the malignant ulcerations, do not create a tithe of the number of the fistulae which are due to misfortune or mismanagement in the process of labour. In some instances the parturient canal gives way, and at once produces a communication of viscera. Such is the case when the perineum yields, and with it a portion of the recto-vaginal septum, although strictly speaking this can hardly be said to produce a fistula till the perineum has healed. More rarely, fortunately much more rarely, —the upper part of the vagina gives way, either by itself, or following the line of a rupture in the cervix uteri. But the great majority of vaginal fistulae, of puerperal origin, are not immediately produced, but are due to subsequent sloughing from severe or long-continued labour without skilled help. That the forceps, or still more readily, craniotomy instruments, may, in skilful hands, produce rupture, I am not prepared to deny, but in the great majority of cases it is the delay in using these instruments, or the using strong traction after the head has been allowed to become thoroughly impacted, which is answerable for the result. Fortunately, we are almost all now agreed on this point, but it was not always so. What unskilled use or neglect of obstetric instruments may do, Emmet and other extensive operators on vesico-vaginal fistulae have taught us. The sloughs produced by prolonged pressure may come away in a day or two, or they may be delayed for a fortnight, or even more, but usually the mischief is apparent in three or four days. The part of the parturient canal affected by the pressure, and consequent sloughing, is influenced in various ways, but it is usually that portion which happens to lie between the head and the pubic symphysis at the time of greatest or longest pressure. Thus the part in rear of the bladder is most frequently affected, but the urethra may be dragged up into this situation, or the anterior lip of the cervix uteri may

be pushed down and caught there. The comparative shortness and inflexibility of the anterior vaginal wall is also not without its influence in determining the seat of rupture. The varying situations of fistulæ, anterior to the vagina, are thus accounted for, but recto-vaginal fistulæ are more commonly due to direct rupture than to sloughing.

It may be well to show at a glance the various causes of vaginal fistulæ—

- | | |
|---|-----------------------------------|
| 1. Incised or punctured wounds. | 7. Foreign bodies in the rectum. |
| 2. Cancerous ulceration. | 8. Foreign bodies in the bladder. |
| 3. Pelvic suppuration. | 9. Chronic vesical ulceration. |
| 4. Syphilitic ulceration. | 10. Sloughing during fever. |
| 5. Pessaries or other foreign bodies in the vagina. | 11. Congenital malformation. |
| 6. Vesical calculi. | 12. Direct tearing in labour. |
| | 13. Sloughing after labour. |

It is not necessary to dwell on the *symptoms* produced by these fistulæ. The symptom is the escape *per vaginam* of urine, feces, or flatus. This may vary in extent, according to the magnitude and position of the fistula. In recto-vaginal fistulæ the feces may continually escape, except when constipation exists in the very highest degree, or this may only occur during diarrhœa, or nothing except flatus may pass. In anterior fistulæ the escape of urine is a more constant symptom, even when the aperture is small. Especially will this be the case if it is situated just behind the urethra. But there may be some power of retention, as for instance when a portion of the urethra only is involved, and not the bladder, or where the aperture in the bladder is so situated as to be above water mark, either in standing up or in lying down, when the bladder is only partially full. More rarely, the opposite wall of the bladder may bulge through the opening in such a way as to form a sort of plug, until more complete filling of the organ separates its walls. The patient's life is always a miserable one; and to add to the above named symptoms, which cause infinite discomfort, there is always some accompanying vaginitis and vulvitis, and the external parts become inflamed and ulcerated, or covered with eczema, and subject to pruritus. The removal of these secondary symptoms, previous to operation, affords no mean element of success in the operation itself.

Diagnosis of the exact condition is often more difficult than might be imagined. I have come across more than one supposed urinary fistula which has proved to be nothing more than incontinence, and which has yielded to the use of strychnia and the constant galvanic current. The finger will generally detect and guide us to a fistula of any size; but in the case of small openings, single or multiple, the most careful and prolonged, perhaps repeated, examination may be necessary. The tubular and duck-bill specula may be used in turn: but no matter which of these

first shows the opening, the latter will be required to bring it fully into view, and within reach. A wide but short tubular speculum, or a duck-bill, with a fenestra an inch wide in its walls, are either of them very serviceable in detecting rectal fistulæ, and in inserting sutures in them. The duck-bill is hardly impaired for its other uses by this fenestra. In small vesico-vaginal fistulæ, or when there is reason to think that the posterior opening is uterine rather than, or in addition to, a vaginal one, the injection of fresh milk into the bladder, while the vagina is exposed, is an excellent aid to diagnosis. The white oozing fluid is at once apparent to the eye.

There is hardly any department of surgery in which such great improvements have been made of late years as in the operative treatment of these affections; and for this improvement, although many great writers, English, continental, and American, have contributed a share, we are mainly indebted to Marion Sims, who, by the introduction of his speculum and of silver sutures, alone made all the rest possible. Emmet, while giving full credit to his distinguished countryman for these improvements, points out that in mere priority he was forestalled in both, such was also the case with the introducer of the sound and the tent, and this gives point to Emmet's remark, that "ideas and general principles may be new, but mechanical procedures seldom are." Although I shall have little or nothing to say here of the surgical treatment of the more rare forms of fistulæ, and will chiefly confine myself to mentioning the principles which guide us in the treatment of the common forms, but which are applicable, with special modifications, to all, yet it may be advisable to place in a tabular form the varieties which such fistulæ may assume. The names of the fistulæ are in themselves sufficiently descriptive of the organs communicating.

- | | |
|--------------------------|------------------------|
| 1. Vesico-vaginal. | 7. Vesico-rectal. |
| 2. Venco-uterine. | 8. Recto-vaginal. |
| 3. Vesico-utero-vaginal. | 9. Entero-vaginal. |
| 4. Urethro-vaginal. | 10. Recto-labial. |
| 5. Uterero-vaginal. | 11. Perineo-vaginal. |
| 6. Urethro-rectal. | 12. Peritoneo-vaginal. |

Of these it will be observed that several (2, 6, 7, and 10) are not fistulæ of the vagina at all; but their mode of origin, of diagnosis, and of treatment is so closely allied, that it seems better to include them in one table. Some of these fistulæ are also so rare, or their treatment is so exceptional, that they may be at once dismissed. These will include the fistulæ into the ureters, the recto-vesical fistulæ, where the vagina has escaped injury, the involvement of the intestine rather than the rectum, and the recto-labial fistula, a mere accidental variety of the recto-vaginal (5, 6, 7, 9, 10). The peritoneo-vaginal (12) is a form of fistula which,

a priori, one would hardly consider as permanently consistent with life. I had, however, at one time, the opportunity of carefully examining a case recorded by Mr Walter Whitehead (*Brit. Med. Jour.*, Oct. 1872), and referred to by Barnes (*Diseases of Women*, p. 461), where no trace of uterus could be found in a multiparous woman (it was supposed to have undergone complete super involution), and where the sound could be passed, and was often passed, through a small orifice at the top of the vagina, and could with ease be moved about in any direction, and for any distance, and felt in close contact with the abdominal walls. Finally, the perineo-vaginal fistula (11) may be eliminated, as differing from the others in not connecting two canals or internal viscera. In its nature it is similar to fistula *in ano*, and I have seen them coexistent, and apparently without intercommunication. Nothing but the greater vascularity and complexity of the parts about the vulva, and the fact that spontaneous healing can be more readily trusted to, prevents the adoption of similar treatment as in fistula *in ano*. I will merely indicate here the lines of treatment in a case of ordinary vesico-vaginal fistula, referring also to the occasional involvement of the uterus or urethra, and adding anything which may be required to elucidate the treatment of recto-vaginal fistulae (1, 2, 3, 4, 8).

Supposing, then, that a moderate-sized rent is discovered between the vagina and bladder, what are the probabilities of spontaneous cure, or cure without operation? Not very great, certainly, but not entirely hopeless. At any rate, the same measures are required for the comfort of the patient as those which give the best chance of spontaneous cure. A small sigmoid catheter (fig. 67), or a Skene-Goodman catheter (fig. 68), should be introduced and retained in the bladder. The vagina must be frequently syringed with warm water containing 1 in 40 of carbolic acid, and the patient must be kept as quiet as possible while recovery from parturition is going on. As that period passes by, the injection may be used hotter and hotter, and the other means are employed which are required as preparatory to operating in chronic cases (see Chap. III.). Spontaneous cure *may* occur in this way, though it rarely does with accidental fistulas. As an aid to cicatrisation, the actual cautery is now almost entirely out of date. Very small rectal fistulae may heal under its influence, though stitching is probably better, even in those; but vesical fistulae, even mere pin-hole apertures, would probably heal spontaneously, under careful general management as well as with the use of the cautery.

There is a tolerably smart contest between some German authorities—Simon, for instance and those of the school of Marion Sims and Emmet, as to the value of the metallic suture, of careful preparatory treatment, and as to other and less important points, and it is not for those

who approach gynecology from the medical rather than the surgical side to decide judicially between such eminent disputants, but the humbler function, analogous in some ways to that of the jury, is open to us, and on the two points mentioned, the great value of silver wire, and the necessity of very careful preparation of the patient, I feel compelled to find an affirmative verdict. In following very closely the lines laid down by Emmet for closing these fistulæ, I am only doing what others have done, not always with similar acknowledgment.

The preparation of the patient, then, for operation furnishes an element of success which should never be lost sight of. As a result of the abnormal direction of the urinary flow there very speedily forms a deposit of phosphatic sediment around the fistula and encrusting the vaginal wall. Hence we have concurrent vaginitis, the combined discharges causing eczema of the external parts, together with abrasions and ulceration of the vaginal wall, vulva, and thighs. This condition must be removed, if it has been allowed to occur. With a soft sponge all deposits must be wiped away, at one or more sittings. All raw surfaces should then have applied to them a weak solution of nitrate of silver. For several days the vagina is frequently syringed with water, as warm as the patient can comfortably bear it, and the addition of carbolic acid (1 in 40) is advisable. The external parts must be kept free from irritation by the application of vaseline. The urine, generally alkaline, must be restored to its normal acidity, for which purpose Emmet recommends the following formula: *R. Ac. Benzoic. ʒii, Sod. Bor. ʒiii, Aq. ʒxii. St. ʒss. ter die, ex aquæ cyatho.* This plan of treatment must be continued for days, or weeks, until the parts have acquired their natural appearance, an occasional touch of nitrate of silver or tincture of iodine being given to excoriations which are obstinate. There is no doubt that success is often obtainable by skilful surgeons without these precautions, and it will be infinitely better if, by attention to the patient from the first, they are hardly required. But under this treatment spontaneous healing does occasionally occur, as it does in spite of the surgeon, in the case of clean artificial fistulæ made for the cure or relief of bladder disease; and few who have seen a vesico-vaginal fistula in its neglected state, and compared it with one thus attended to, can doubt that the chances of spontaneous healing or operative success are both greatly improved.

Another preliminary, not always, but often, required, is the division of cicatricial bands which prevent the edges of the fistula from being easily approximated and united without undue strain. Such bands, if slight, may be snipped with scissors at the time of operation, but if strong or extensive this should be done as a preliminary operation. The resulting hæmorrhage must be stayed by hæmostatic astringents and the pressure

of one of Sims's dilating plugs, and a week or ten days is allowed to elapse, during which frequent carbolic syringing and the occasional introduction of the glass plug should be employed.

For the operation, three assistants at least are required, one to take charge of the anæsthetic, another of the duck-bill speculum, and a third of the other instruments, sponges, &c. This latter must be trained to keep his fingers out of the way and himself out of the light. The patient having had the bowels well cleared, and a dose of opium administered, is anæsthetised, and placed in the lateral prone position. The duck bill speculum is introduced, and the fistula brought as well as possible into view. The genu-pectoral position is rarely necessary. The lower border of the fistula is then seized with a tenaculum, or a long finely-toothed forceps, and a strip of vaginal mucous membrane, one fourth to one-sixth of an inch wide, is carefully removed all round the orifice, leaving the

vesical mucous membrane intact, but paring close up to it. This freshening should extend well beyond the angles of the wound, in order to provide against the possibility of a small fistula remaining at those points. When the septum is very thin it may be difficult to obtain a sufficient raw surface, and it may be necessary very carefully to split the layers between the vagina and bladder, making the non-mucous surface of each to play a part in the new cicatrix. Those who have been privileged to see Marion Sims operate with the small razor like knives, capable of being set at any angle in a long handle (fig. 46), would be tempted to under-estimate the difficulty of using such an instrument with sufficient steadiness and skill, but in ordinary hands the use of sharp scissors is preferable



FIG. 72. —Paring Fistula by Scissors (Churchill et Leblond).

(fig. 72). A variety of scissors curved in various ways would form part of the armamentarium of a specialist operating on any large scale, but figs. 73 and 74 show two of Emmet's favourite forms. It will depend on the skill of the operator, and the accessibility and size of the fistula, whether sufficient membrane can be removed in one long strip, or whether fresh hold will have to be taken and the paring done at several strokes. If the vesical mucous membrane has been cut it is apt to bleed freely. This may be checked by seizing the bleeding edge with a torsion forceps which is allowed to hang for a short time, the delay being otherwise not disadvantageous. If that fails, a ligature of gut may be passed through the vaginal wall into the bladder and out again at a very short distance from the raw edge, so as to encircle the

bleeding vessel. Such ligatures must never be placed far, say not more than half an inch, from the middle line, or they may involve the ureter. In the case of a large opening they could never be free from this danger.

The wound being now pared, its edges must be united so that the raw surfaces will be in accurate contact. Pure silver wire is certainly the best for this purpose. For their introduction most men could, I think, easily manipulate laterally curved needles with fixed handles (fig. 48), and with their edges rubbed down so as to make them as nearly round as possible. Tubular needles (fig. 49) with a lateral or double curve are apt to fail, from the wire refusing to pass. Emmet, however, and others prefer to use short, round needles, from one-half to three-quarters of an inch in length, slightly curved at the point, which are introduced



FIG. 73. Emmet's Curved Scissors.



FIG. 74. Emmet's Double Curved Scissors.

by means of a needle-holder, carrying with them a loop of silk. This loop is used to draw back through both sides of the fistula the end of a silver wire hooked round it. The space between the stitches should be about one-sixth of an inch (fig. 75). All the necessary stitches having been placed, and a little time being given to allow oozing to cease, which cessation may be accelerated by the application of a little pure spirit, the bladder should be washed out with a gentle stream of warm water, directed through a catheter, and allowed to escape at the wound, and the edges must now be approximated. Simple twisting of the wire is sufficient (fig. 60). The twisted ends are then cut off about half an inch from the wound, and bent over laterally to alternate sides. A small self-retaining catheter is introduced, and the same precautions as to after-treatment

must be observed as in all other operations of this kind—very light nutritious food, and opium to lock the bowels for a very few days, and to keep the patient at rest. The stitches should remain for eight or ten days, and should be removed with the greatest possible gentleness, the catheter being used for some time subsequently.

When the vesico-vaginal tear implicates also the cervix uteri, any operation for its closure becomes still more difficult and complicated, but must be conducted on the same lines. It not unfrequently happens, however, in such cases, that partial spontaneous reparation takes place,



FIG. 75. — Fistula with Wires inserted (after
Chamberlain et Leblond).

leaving two separate fistulae, one into the vagina, the other into the uterus, or perhaps one only into the cervix uteri. This can only be reached by freely dividing the cervix up to the fistula, so as to reproduce, to a certain extent, the original tear through it.

When the urethra is the part involved in a vaginal fistula, the facility of repairing it is greater than in the case of the bladder, so far as getting at it is concerned, but the intervening tissue to work upon is excessively thin. It is therefore recommended, after freshening the edges on the vaginal side, to relieve the tension by a longitudinal incision, parallel to the borders of the repaired fistula. The fistula

is kept well in view during operation by retaining a full sized gum-elastic catheter in the urethra. I am inclined to recommend, in this case, though from little personal experience, the use of fine gut sutures, which may be left for a longer period than wire ones, or indefinitely.

Recto-vaginal fistulae have been already referred to in connection with the subject of torn perineum. As a result of this accident, with subsequent union of the perineal tear, and also as an occasional result of abscess or syphilitic ulceration, they come as frequently under the notice of the general medical practitioner as vesical fistulae, although in some

respects they are more difficult of repair. This is owing to the greater difficulty of bringing them steadily into view. With the finger in the rectum there is no difficulty in protruding the torn septum into the vaginal space, but to insert a duck-bill speculum with its convexity to the pubes, though it is generally looked upon as our only resource, is certainly not in accordance with the principles upon which the use of that instrument is based. By this means, and having the labia further held open by spatulas, while the patient lies on her back in the lithotomy position, the fistula is exposed. A fenestrated speculum, through the fenestra in which the fistula can be got at, is sometimes of service, and it is worth while to have one specially cut for the operation. When the patient has been anaesthetised, a large bougie can be easily passed into the rectum, previously well emptied by injections, and this serves to keep the fistula prominent. The mode of paring the edges and of inserting the sutures varies little from that followed in relation to vesico-vaginal fistulae, but the beveling of the edges, the wider part of the tear being vaginal, is often already very great before any paring is done. In cases where there is difficulty in obtaining a sufficient raw surface, the septum may be carefully split, the vaginal layers stitched together with wire sutures, and the rectal ones with pure gut, which is left to disappear of itself. The rectal stitches should be first inserted. Dr Goodell recommends (*op. cit.*, p. 68) a more complicated process, "a shallow cut is made round the vaginal mouth of the fistula, about half an inch away from it, and the mucous membrane dissected up to its rim in a frill. This is next inverted and pushed into the rectum through the opening, which is now closed by rectal and vaginal stitches—the former uniting the raw surfaces of the frill, the latter the raw strip around the vaginal rim of the fistula." In order to insert these rectal sutures it is necessary to previously stretch and paralyse the rectum, and then to introduce a duck-bill speculum within it.

Occlusion of the Vagina.

Occlusion of the vagina may be congenital, and this state, together with its occasional consequences, will be described in Chap. VI., along with other malformations. Much more rarely it may result from injuries, or from sloughing after labour or otherwise. If complete, and if it occurs before the menopause, there will of course be retention of the menstrual fluids, and operative proceedings will be required similar to those for congenital retention. If only partial, it may still act as an impediment to connection, and demand remedy. In all such cases, the maxim is to do as much as possible by dilatation, and as

little by cutting. If anæsthesia is used, the parts yield readily and betray the points of greatest tension. These should be carefully snipped with scissors, and the glass dilator used for the purpose both of distension and of arresting hæmorrhage. In this way it is astonishing how little cutting of the surface enables the vagina to unfold to its former calibre.

Artificial occlusion of the vagina is recommended in the case of large or incurable fistulæ, and its adoption will, of course, depend, to a very great degree, on the presence or absence of menstruation, and on the marital relations. Menstruation is, however, no absolute barrier, as in such cases the fluids will find their way by the rectum or bladder. The former would be the more satisfactory outlet, owing to the danger of cystitis and accumulation of clots in the bladder; but I have recently had under notice a case (fig. 82) where the vagina is congenitally absent, the much retroverted uterus opens directly into the bladder, and menstrual life has, so far, about five years, been unattended with any difficulty, except for one or two periods after my first diagnosing the case by passing the uterine sound *per urethram*.

As a matter of fact, now-a-days, vaginal rents very seldom indeed demand total occlusion of the canal; and, with the modern improvements in operating on fistulæ it should be but a last and rare resource. The surfaces chosen for freshening and attachment will vary, of course, according to the exigencies of the case and the amount of sound tissue remaining; but, as a rule, it will be found better to unite the anterior and posterior walls than the lateral ones. Paring and uniting of the vulvar surfaces would, *a priori*, appear to be a comparatively easy matter, but it has been found practically to be almost impossible to avoid some fistulous opening in the neighbourhood of the urethra, which destroys the effect of the whole operation.

Prolapse of the Vagina.

This has already been mentioned in connection with torn perineum. It seldom exists to any great extent quite independently of that, but may do so. Its causes, its symptomatology, and its treatment are so intimately associated with those of the same affection of the uterus, that it will avoid much repetition if we consider them together (*see* Chap. XI.).

CHAPTER VI.

CONGENITAL MALFORMATIONS OF THE GENITAL TRACT. Ovaries and Fallopian Tubes, Uterus, Vagina, and Vulva. Hermaphroditism. Results of Atresia, and Proceedings for its Removal.

It seems advisable to mention in one place the congenital malformations which are met with in the various portions of the genital tract. Many of these abnormalities are, of course, quite incurable, and bear solely on the question of viability, or of marriage or sterility, but others are of great practical importance, leading to the retention of the products of menstruation, and thus causing painful and dangerous affections which are fortunately within the reach of art.

The Uterine Appendages.

Under this heading we include the ovaries and Fallopian tubes, although from another, and perhaps more strictly scientific point of view, the uterus, vagina, and Fallopian tubes might rather be considered as the appendages, or at least the ducts, of the ovaries. Malformations of the latter organs, as a rule, exist only in connection with malformations of the uterus, but they may exist separately, and are doubtless sometimes the hidden and obscure causes of menstrual and other diseases. When the uterus is absent, or practically absent, being found only in the most rudimentary form, it is rare to have the ovaries present, yet cases are recorded where, in the absence of any recognisable uterus or vagina, there occurred an undoubted menstrual molimen, and the pathological theatre shows that in such cases one or both ovaries may exist in a less rudimentary form than the uterus. The occurrence of a monthly molimen under such circumstances would therefore warrant us in believing in their existence, although we were unable to detect them by physical examination, but in the absence of an increasing tumour, caused by the accumulation of the monthly secretion, which would imply the presence of a uterus of some size, or if there were no signs of intra-pelvic hæmorrhage, it would hardly warrant us in any attempt at surgical interference. I can imagine, however, though I have never seen, such an amount of ovarian trouble, with complete

absence of vagina and uterus, as might warrant an attempt to seek for and remove by abdominal section the now redundant and harmful glands. Peadar operated in a case of this kind, but with fatal result. Independently of absent uterus, one or even both ovaries may be absent from foetal disease. Klob and Rokitsansky have attributed this in some instances to twisting of the ovarian attachments, whereby the ovary was slowly strangled, atrophied, and completely obliterated. This is somewhat analogous to what occurs occasionally to the mature ovary when the subject of cystic enlargements. In the dissecting-room, a supplementary ovary has also been occasionally found, originating in a mere accidental fissiparous division of that of one side during early development. If the operation of oophorectomy assumes as prominent a position as it at present threatens to do, such abnormal structures may yet be encountered in the living subject.

Hernia of the ovary through the canal of Nuck, the representative of the inguinal canal, and appearing either at the external ring, or in the labium, has already been mentioned, and if not a congenital phenomenon, the condition of parts which allows of it is so. Its first recognition may be due to an attack of ovaritis, and this is apt to become chronic, or recurrent to such an extent as to necessitate the removal of the organ, reduction being then seldom possible, and after a time hardly advisable. Most commonly, however, an operation has been undertaken for hernial obstruction, and the ovarian contents have only then been discovered. Tait gives a full summary of such cases as he has been able to trace (*Diseases of the Ovaries*, 1883). A distinct swelling of such hernial ovaries is noted at the menstrual periods. Hernia of the ovary elsewhere has been described, but chiefly as a *post-mortem* phenomenon. Prolapse of the ovary into Douglas's pouch will be afterwards noticed (Chap. XV.), and it is usually an acquired and not a congenital condition. The position of the ovary in hermaphroditism or pseudo-hermaphroditism may be very various. The ovary, though existent, may also be arrested in any stage of its development, either with or without a similar arrest in the uterus, but most commonly this arrest coexists with what will be described as infantile uterus (Chap. VIII.). The combination of these two arrests in development is a fertile source of menstrual derangement and difficulty, and may lead to nervous affections—hysteria, epilepsy, and hysterio-epilepsy. It was for this condition, and to cause by its local irritation a tendency to fuller development of all the organs, that Simpson introduced the galvanic stem pessary into the uterus.

Of the congenital defects of the Fallopian tubes little is accurately known, although a fuller knowledge of them would be of the greatest value, seeing that the investigations of Lawson Tait have rendered it

probable that these ducts play a more important part in physiology and pathology than has formerly been assigned to them (*Brit. Med. Jour.*, vol. i., 1881). In his recently published work on diseases of the ovaries he intermingles his remarks on the congenital and acquired abnormalities of these tubes, so as to make it a little difficult to ascertain what facts he has personally obtained, or culled from other sources, on the subject of the former. But I gather that congenital tubal abnormalities sometimes do, and sometimes do not, coincide with similar developmental conditions of the ovary, and that a not uncommon defect lies in the relative position of the ovaries and tubes (fig. 78); sterility, and I would suppose tendency to hæmatocele, therefrom resulting. I cannot ascertain whether he considers that the occlusion of these tubes at both ends, and their consequent distention into cysts, is often a developmental defect, or one nearly always dependent on inflammatory adhesions. Probably it is too much to ask from any present observer. Closure of these canals at either end is not uncommon from gonorrhœal or other inflammatory extensions, leading to accumulation of their contents, abscess, or hæmatocele (Chap. XVIII.).

The Uterus.

The key to nearly all the congenital derangements of the uterus and vagina lies in the fact that they are formed in early fetal life by the coalescence of the two Mullerian ducts. Most of the recognised malformations are therefore traceable to insufficient, or excessive, or unequal union of the two sides, or to imperfect development of either half or of both. The uterine portion unites later than the vaginal, and the Fallopian portion remains permanently ununited. In the following brief account of these malformations it is their practical bearing upon the health and comfort of the patient which is held in view, rather than the anatomical interest of the matter.

Absent Uterus.—Clinically speaking, this is not extremely uncommon; that is to say, a condition of matters exists in which no uterus can be discovered by examination of the living subject. In the dissecting-room, however, some trace of the organ can generally be found in such cases (figs. 76 and 77). Menstruation is, of course, absent, although we have seen that some molimen may be present, dependent on the more or less perfect state of the ovaries and Fallopian tubes. The vagina also is often absent, or exists only as an imperfect canal. Every external appearance of womanhood may be present, but the finger in the rectum, aided by abdominal pressure, or by the presence of a sound in the bladder, detects nothing like the usual uterine body. A very small

hardish substance may sometimes be felt centrally, or at either side, but practically it may be set aside as only possibly denoting some rudimentary stage of uterine development, of no clinical importance. The traces



FIG. 76. Rudimentary Trace of Uterus (Schroeder). *u*, uterus.

which are discovered on dissection are found on the posterior surface of the bladder, there being but one pouch of peritoneum between the bladder and the rectum, as in the male (fig. 76). These traces may consist of either a simple transverse band or bow, representing the two conjoined halves of the body, without cervix; or there may be a small substance, hollow or solid, somewhat resembling the uterus in shape, and with or without separate horns (fig. 77).

Uterus Unicornis, or one-sided uterus (fig. 78), depends on the arrest of development of one of the two Mullerian ducts. This condition is compatible with perfect menstruation, and even pregnancy. It is difficult and often impossible to diag-



FIG. 77. Rudimentary Uterus (Schroeder). *u*, uterus; *b*, bi-manual examining horns; *c*, round ligaments; *d*, Fallopian tubes; *e*, ovaries.

nose it during life; but it may be surmised if we meet with certain conditions, viz., a narrow vagina (unilateral in development), a small cervix, and a uterus which is shown by sound and

having a somewhat sharply-pointed fundus, and sometimes an unusual length. All other causes of uterine elongation or lateral displacement must be capable of elimination; and, considering the rarity of the affection, and the many sources of error, the diagnosis must be held subject to revision. How many errors would be avoided if the practitioner would acquire a habit of mentally noting, and carefully remembering, which of his diagnoses were merely provisional! The undeveloped half may consist of a mere band of fibro-myomatous tissue, or may contain a small cavity, or an elongated tube, opening within the more developed one at any point, or with no outward opening at all. If pregnancy occur in the fully developed side, all may go well; if in the undeveloped one, early abortion may fortunately occur, or towards the middle of

pregnancy rupture may take place, with all the phenomena and generally fatal results of a so-called interstitial extra uterine pregnancy, or a premature and a perfect fetus being born together, or near the same time, may add to the recorded but doubtful cases of super-fetation. While these pages were going through press, I have met with an interesting case of a



FIG. 78. Uterus Unicornis (Schneider). LH, left uterine horn. Lo left ovary. LT, left Fallopian tube. LLr, left round ligament. RH, RT, and RLr represent the corresponding structures on the right side. The relative positions of the ovaries and tubes are abnormal.

lady attacked since marriage with membranous dysmenorrhœa. She herself (the wife of a medical student) observed that one horn of the decidua was always much longer than the other, and this led me to clearly make out the signs of uterus unicornis in a minor degree.

Uterus Duplex, double uteri, or **Hysteros Didelphys**, are the terms applied in the case where both Mullerian tubes have become fully developed, forming two almost separate uteri, with little coalescence (fig. 79). It is of excessively rare occurrence, except in the case of non viable foetal monstrosities; but of late years instances have been found even in women who have borne children. They are often accompanied by a double vagina. A typical case of the kind is well reported by my colleague, Dr Cullingworth (*Brit. Med. Jour.*, 1882, vol. ii. p. 387). There is no reason why, in such a case, pregnancy might not occur in either section, or even in both, and that simultaneously. Menstruation occurs, not at two different periods, but as in the normal condition. The diagnosis, attention once called to it, would be simple if the vagina were at all perfect.



FIG. 79. Uterus Duplex (Thomas).

Uterus Septus and **Uterus Bicornis** constitute two varieties of imperfect coalescence of the two primordial constituents of the organ. In the former (fig. 80) the uterus is divided by a septum, which extends downwards from the fundus in various degrees, but externally the organ may

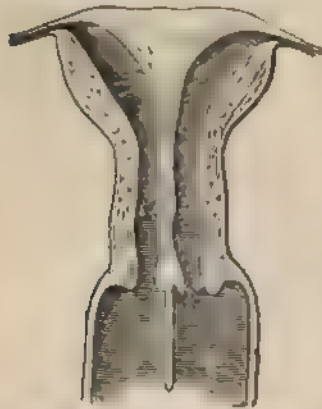


FIG. 80.—Uterus Septus (Schroder-Kussmaul)

show little or no sign of malformation, in the latter (fig. 81) there is a separation apparent on the outside of the organ, and varying in extent from a mere sulcus at the fundus, which evidences its bilateral origin, to a division which practically creates two uteri with a common cervix or os externum. Combinations of these two forms may also exist, the slightly two-horned uterus having also a septum dividing the common cavity. Pathological museums probably show but a small portion of the possible or actual varieties. A single or double vagina may coexist with either of these malformations; the more complete the double

character of the uterus, the greater the probability of vaginal division.

Although there may be no arrest of development in the sense now treated of,—that is to say, in the lateral symmetry or central union, — there may be an arrest of developmental growth. Thus, even in the

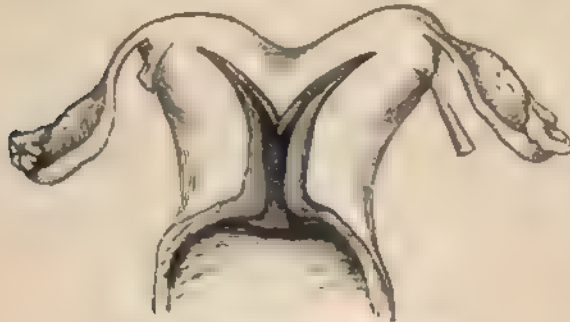


FIG. 81.—Uterus Bicornis (Schroder).

adult, the uterus may retain the type which it has normally assumed in the infant, or, reaching the type of the young virgin, it may retain that, while the size may remain considerably under the normal. These

two abnormalities,—the infantile uterus and the so-called congenital atrophy of the uterus,—are, together with the same condition of the ovary, of great practical importance, but they will be more fittingly described and discussed, when their resulting consequences are under consideration (see Chap. VIII.).

The Vagina.

The vagina, as we have already noted, is also affected by the want of due fusion between its lateral halves of origin, and arrest of development may occur in either half, or both. In the one case we have wholly or partially double vagina, in the other it is narrowed or obliterated. Using, as far as possible, the same classification as for the uterus, we have

Absent Vagina.—Clinically speaking, this refers to cases where we have nothing to show that any canal exists between the bladder and rectum. Rudimentary structures, discernible only *post mortem*, may be left out of account. This absence may occur either with a fully developed uterus and appendages, or with a more or less corresponding want of development in them. But the absence may be partial confined to a portion of the vaginal canal only, and the undeveloped portion may form a barrier between the uterus and the vulva of very varying extent, from a mere intervening diaphragm to complete obliteration. In all such cases, if the uterine and ovarian functions are active, we have a condition which will demand surgical interference, as we shall just now see.

Vagina Unilateralis.—This condition certainly exists, looked at from a developmental point of view, especially in connection with the *uterus unicornis*, but as the vagina in this state, owing to the distensibility of its walls, usually fulfils all its normal functions, it is more interesting morphologically than practically.

Vagina Septa, or complete **Vagina Duplex**, may coexist with the uterus septus, bicornis, or duplex, —the septum being only partial, and chiefly affecting the lower end of the vagina; or, the two lateral organs may be perfect, communicating with their individual cervixes and closed by perfect hymens. But double vagina may also coexist with a single normal uterus, one side being in all probability somewhat rudimentary. With double uterus and vagina, one vagina may terminate normally in the vulva, with perfect hymen, and the other may be occluded, so as to escape notice until distended with menstrual fluid (*unilateral hæmatokolpos*).

The vagina may be abnormally narrow or short, without evidence of any other developmental abnormality. In the former case, artificial dilatation may be required subsequent to marriage; in the latter, there is danger of uterine inflammation following connection, unless timely warning can be given by the physician.

Finally, the vagina, perfect otherwise, may be occluded by a complete condition of the hymen, that structure, nearly always unduly thickened

under the circumstances, having no orifice for the escape of uterine discharge.

In double vagina, the one half is frequently rather in front of the other, and this is attributable to the fact that the left Mullerian duct lies somewhat in front of the right. But in certain more rare uterine malformations there are traces of an antero-posterior defect in development, as well as of a lateral one. About two years ago I was consulted by a young woman of about twenty-three years of age on account of some vague discomforts, which led to a vaginal examination. Menstrua-

tion was said to be perfectly regular; but, to my astonishment, I found complete absence of the vagina. It speedily became clear that menstruation could only occur through the urethra, though there had never been any vesical discomfort, nor suspicion of a wrong channel. I had only a uterine sound at hand, but I passed it into the bladder, while I explored the rectum with the left



FIG. 82. Congenital Atresia Vaginae, Uterus opening into the Bladder (Author's case).

forefinger in search of a uterus above the atretic vagina. In this way the sound undoubtedly passed into a clearly-definable retroverted uterus, which I could move freely *per rectum*. There were some clots after this, and more irritation of the bladder than ever before. She declined to allow of a digital examination of the bladder *per urethram*, and I have since lost sight of her. In this case (fig. 82), where the cervix or lower portion of the uterus opened into the bladder, it may have resembled, morphologically, the *sinus peculiaris* of the male. And we have a reminder or survival of a former state of development, permanent in birds, where Muller's tubes open into a common uro-

genital canal; and where, at a still earlier stage, this common duct opens, along with the rectum, into a general cloaca. The English student will find a clear account of the above mentioned congenital abnormalities of the uterus in Schröder (*Ziemssen's Cyclopaedia*, vol. x.), who, however, together with nearly all subsequent writers, is mainly indebted to the classic work of Kussmaul (Würzburg, 1859).

The Vulva.

In malformations of the vulva the antero-posterior failure in development is still more frequently apparent.

Absent Vulva is found in those cases where no external opening has occurred, and where, therefore, the bladder, genital canal, and rectum have no outlet, common or separate (fig. 83). Such fortunes are non-viable, and generally monstrous in other respects. In other cases (fig. 84) the external opening is present, but the perineal septum has



FIG. 83.



FIG. 84.



FIG. 85.



FIG. 86.



FIG. 87.

Five Diagrammatic Figures, after Schröder, illustrating stages in the development of the Genito-urinary Organs and Rectum, referred to in the present text. ALL, the allantois, M, Müller's canal, R, rectum, A, depression corresponding to future anus; CL, general cloaca, C, clitoris; B, bladder; U, urethra, V, vagina, S, sinus urogenitalis.

not descended between the rectum and genito-urinary tract. In arrest of development at a still later stage, both anus and perineum may be found, but the separation of urethra and vagina may occur high up in the pelvis (fig. 86), both organs communicating with the vulva by a single passage. If the clitoris be large (fig. 86), we have here a sort of female hypospadias. Or the developmental narrowing of the urethra may be entirely arrested, and the bladder and vagina may open into the vestibule together (fig. 87).

Lateral deficiencies or redundancies may exist in any part of the vulva, but not so as to allow of their classification in the same manner as those of the vagina or uterus. The most frequent types of malformation are those which give to the external organs of one sex more or less of the appearance of those of the other, giving rise to what is termed

Hermaphroditism.

By this term was originally meant the union of both sexes--of Hermes and Aphrodite--in one individual. This condition of things was, previous to the opening up of modern gynecological studies, not unnaturally supposed to exist with moderate frequency. Cases of *true hermaphro-*

ditism--that is, cases where a real testicle, capable of secreting spermatozou, and a real ovary, capable of secreting ova, have been found to exist in the same individual (for this is the only true definition of a bisexual human being), are indeed few and far between; so much so, that a little scepticism may be considered pardonable even as to those which are best authenticated, although no antecedent impossibility can be pleaded. For an analysis of such cases, and for a most masterly discussion of the whole subject, the



FIG. 68.--Marie Madeleine Lefort, an undoubted female (after Churchill et Lobland).

reader is referred to the second volume of Sir James Simpson's collected works. Personally, I must plead guilty to being still a sceptic.

On the other hand, cases where the congenital modifications of the external organs, in shape and relation, are so great as to render it extremely difficult, if not impossible, to distinguish the sex, are by no means

uncommon; and such a case of *false hermaphroditism* may at any time occur to the practitioner, when he may be called on, under great difficulties, to determine the sex of an infant. Let him not do so off hand, or without careful consideration, and more than one inspection. All such cases must be recognised as dependent on arrests or redundancies in the development of individual parts, or on incomplete or abnormal union of lateral parts. Thus, a large clitoris, with completely adherent labia, will give a male aspect to a female; a very small penis, and a scrotum only partly closed in, will give a female appearance to a male. The closure or non-closure of the central raphe is the most frequent source of temporary or permanent mistakes, the complete closure being the male characteristic. The

male organs may resemble the female in the smallness of the penis, especially if it be hypospadiac; and hypospadias, if extensive, involves to some degree a separation between the lateral halves of the urethra and scrotum, or even perineum, thus giving rise to an appearance closely resembling the vulva. If the testicles have not descended, an arrest in the developmental process likely enough to be coexistent, we lose



FIG. 89. Section of Pelvis of M. M. Lafort (after Churchill et Leblond). *a*, ovary; *b*, uterus.

another clue to the real sex; but even if they are apparently present, the possibility of labial hernia of the ovaries must not be forgotten. The female organs will resemble the male when the clitoris and its prepuce are unusually large, and when adhesion has taken place between the opposite labia. Hermal ovaries would make such a case peculiarly difficult to decide; and the difficulty would culminate if the rare condition of the urethra, passing along the clitoris and opening at or near its point, also existed. In all difficult cases, a search *per rectum* for the uterus would solve this doubt, if it were not that absent or undeveloped uterus may further complicate the matter. Its evident presence is positive, its absence is only negative, evidence of the sex. A very short time may suffice to render more prominent the characteristic

sexual organs of the individual; and at puberty the general physical development, and the form which sexual desire may assume may assist. The former must not, however, be too much depended upon, as the accompanying illustrations will show (figs. 88, 89). The occurrence of menstrual or seminal discharges, the latter microscopically examined, is of much higher value. If the judgment as to the sex must be suspended, and as its doubtful nature cannot be publicly recognised, it is decidedly advisable to bring up the child as a male. This will involve less difficulty in after-life, in case of mistake, than will the opposite course.

Atresia, or Occlusion of the Genital Canal.

So far, I have said little or nothing of the practical inconveniences which accompany any form of malformation that occludes the genital passage at any part of its course. Occlusion of the vulva or vagina will, of course, offer an impediment to marriage, and will, as well as the occlusion of the uterus, prevent the escape of the products of menstruation. Closure of the vulva by slight acquired adhesions has already been mentioned (p. 57), and need not occupy us any further, and such external closure as is due to considerable congenital abnormality of the external organs, as in so-called hermaphroditism, may also be left out of consideration. It is either irremediable, or forms part of a still further closure involving the vagina, which may or may not be amenable to treatment.

An imperforate hymen is a not uncommon cause of congenital occlusion, and it generally leads, at an early period of the menstrual life, to a medical investigation. If accumulation of menstrual secretion has taken place above it, it may be found bulging outwards to a considerable extent: and the same bulging will probably be found when a mere band of vaginal tissue exists just behind the hymen. It rarely bursts, and thus performs a natural cure; for when the hymen is complete, it is nearly always also hypertrophied. The vagina may, as we have seen, be congenitally occluded in its whole length, being practically absent, or the occlusion may involve any portion of it. Congenital uterine occlusion is less common than vaginal, but may involve either the os externum alone, or the whole or separate portions of the cervix. Various injuries may give rise to narrowing or stenosis of the vagina and uterus, but this is seldom so complete as to lead to absolute occlusion. The same consequences and symptoms will, however, then arise as from congenital occlusion, and the treatment is conducted on the same principles.

In congenital atresia of any portion of the tract, the first suspicion of anything being wrong usually occurs at the period of puberty, say from twelve to fifteen years of age. The patient begins to show

signs of menstruation, in the form of back-ache and general *malaise*; and this is generally accompanied by severe colicky pains and some abdominal tenderness, without the least appearance of any external sanguineous discharge. These symptoms subside in a few days, but are repeated with greater severity at more or less regular monthly intervals. They, by and by, begin to be accompanied by a sense of pressure on the bladder and rectum, which never entirely disappears. Sometimes there is distinct fever during the monthly paroxysms, leading to a suspicion of, or actually caused by, local inflammations. The general health fails, and the patient falls into a state of hectic, with or without anæmia. Medical advice is now sought, if not previously. In some cases the symptoms are not so characteristic. In one, where I had lately to make an artificial vagina, the patient, a girl under twelve years of age, had had no periodic symptoms, but an almost constant agonising colic for nearly eighteen months; there were no external manifestations of puberty, but an examination of the abdomen revealed a large globular uterine tumour, easily reached through the rectum. In another case, the symptoms, although present for several years, were so slight, that it was only after marriage that the state of matters was investigated. Sooner or later, if the uterine and ovarian functions continue, the distention caused by their products leads to a tense but fluctuating tumour, the site of which will depend on the seat of obstruction. If the hymen alone, or only the lower part of the vagina be affected, the tumour will, of course, be vaginal (*hæmatokolpos*), will press much on the pelvic viscera, leading to constipation and dysuria, and will be felt bulging towards the vulva or almost occluding the rectum. It is only after a considerable time that, the vagina being incapable of further distention, the uterus begins to dilate also, the two cavities being ultimately thrown into one, pretty much as in the second stage of labour. In occlusion of the upper vagina or cervix uteri, the uterine distention alone exists, and gives rise to a smooth globular tumour (fig. 90) in the hypogastrium (*hæmatometra*), often much inclined towards the right side. Great distention of the vagina alone may also be felt above the pubes, and a careful examination may in this case detect the hard undilated uterus at its summit (fig. 91). If the facts and history of the case be strictly inquired into and borne in mind, and a careful examination made, these tumours can hardly be mistaken for pregnancy or ovarian cystic tumour, except in the case of occlusion of the uterus alone, in later life, and from accidental causes. Much of the menstrual fluid in these accumulations is doubtless directly absorbed, or its more liquid parts may exude through the uterine walls under the inevitable pressure, to be then absorbed by the peritoneum; the remainder constitutes a dark, trenchy-looking fluid, of varying density.

and contains altered blood-cells, mucus, and occasionally some cholesterol. As the uterus continues to distend, danger arises, either from its bursting, or from bursting of the Fallopian tubes, which, later, partake in the dilatation, or from escape of blood into the peritoneum through their fimbriated extremities. There is strong reason also to believe that blood may accumulate in the tubes to a dangerous extent, independently of any reflux from the uterus. It may therefore be laid down as a general rule that, when this condition of dilated uterus or vagina is discovered, the sooner operative measures for its relief are resorted to the better.

Unfortunately, the escape of the fluid externally thus induced is apt to be followed by sudden uterine or Fallopian contraction, which may precipitate the accidents just mentioned; but this danger has to be encountered, and the longer we wait the more imminent it becomes,



FIG. 90. Hematometra. Uterus distended with blood (Schroeder).



FIG. 91. Hematokolpos. Vagina distended with blood (Schroeder).

especially as the Fallopian tubes are apt to contract adhesions which render this tearing more probable. To the risk which may thus follow the liberation of the retained fluid, there must be added another, viz., the danger of septic changes in what remains, as soon as the external air is admitted. These two classes of danger point somewhat in opposite directions as regards treatment,—to avoid the one, the slowest possible exit should be given; to avoid the other, the sooner the whole can be evacuated and the passages rendered a-septic the better. There is no use in attempting to ignore either horn of the dilemma, in the face of all past experience.

Treatment.—Supposing that the hymen alone is the cause of obstruction, there are two modes of treatment open to us. First, we may make a free incision into the obstruction, and dilate it at once with the fingers or with

a rectum bougie; then, when free escape has taken place, we wash out the vaginal or utero-vaginal cavity with copious antiseptic injections. These injections must be frequently repeated, and in the intervals the patient must wear as large a size as possible of Sims's or Barnes's dilator. This serves to prevent fresh adhesion, if it does not also to some extent prevent the admission of septic germs. Secondly, we may let off the fluid much more slowly, and with complete antiseptic precautions from the beginning. This can sometimes be done by syphon action. A trocar and cannula, the latter furnished with a long india-rubber tube, are inserted through the centre of the hymen; the tube, first filled with carbolic water, is allowed to hang down into a basin of the same, and the contents of the abnormal cavity thus gradually drain away. When they have ceased to flow, as a momentary lifting of the tube from the basin will ascertain, the cannula is withdrawn, and the orifice in the hymen is closed by a *serre-fine* or two, or by a suture, or by collodion, if it can be made to adhere. Next day the free incision may be made, and the case treated by antiseptic injections. Very slow aspiration must be substituted for the syphon action if the fluid is too thick to run without it.

These two plans should, in my opinion, be used eclectically. If the case is seen early during menstrual life, and when the absence of a supra-pubic tumour renders it probable that there is little or no uterine distention, or distention and adhesion of the Fallopian tubes, the former plan, by free incision, may be used, and in opposite circumstances the latter. In a doubtful case, the latter—by antiseptic drainage—should be preferred. When the fluid will not flow through a moderate-sized cannula without strong aspiration, incision must be proceeded with at once. Small bands of vaginal adhesion, just within the hymen, and felt to be mere membranous obstacles, are to be treated in the same way.

More extensive occlusions of the vaginal canal require careful consideration before proceeding to their treatment. Their extent must be made out as thoroughly as possible by careful rectal examination, in combination with supra-pubic digital pressure, and also with a sound in the bladder. In this way the presence of the uterus must be distinctly ascertained. We should be quite clear as to the existence of some menstrual molimen, and of some vaginal or uterine distention. It is doubtful how far one would be justified in risking an operation for the mere purpose of hollowing out a vaginal canal, when everything points to the absence of the utero-ovarian structures and functions. The object of the operation is twofold—to make a permanent vagina, sufficient to permit of marriage, and to allow of the immediate and permanent escape of the menstrual discharge. The latter is the primary and more important one, being essential to the life and health of the patient, and it may sometimes be achieved when the former is impossible; but it must not be attempted

by apparently easier methods, such as tapping the uterus *per rectum*, when a vaginal approach is at all possible.

The process of making an artificial vagina, or of opening up any large occluded portion, is simple enough on paper, but not always so simple in execution. The external opening is made with the scalpel. It can only be made large enough by a transverse cut, which must cross at a short distance in front of the anus. If there is a slight vaginal *cul-de-sac*, it will serve as our guide, and the incision will cross it. The skin or semi-mucous tissue being thoroughly divided in this way, and torsion of any bleeding point having been made, the rest is all done without cutting instruments, except in cases of traumatic occlusion. In these, any very prominent bands of cicatricial adhesion must be divided by slight snipping with blunt-pointed scissors during the progress of dilatation.

The patient being anesthetized and placed in lithotomy position, a catheter is placed in the bladder and held up against the pubes by an assistant. The left forefinger of the operator is introduced into the rectum and retained there as a permanent guide, while the right is used, after the incision is made, as the vaginal dilator. Taking care to retain a distinct septum between the advancing finger and the rectum behind and bladder in front, we slowly tear through the connective tissue, working freely from side to side, so as to insure sufficient space, but always pushing onwards. The handle of a scalpel may give a little occasional assistance; but if so, we must be sure that its edges are not too sharp, and that they are only used horizontally. Gradually a passage is thus opened to the uterus, or we open into the dilated upper end of the vagina, and can feel that we are in a cavity filled with fluid. In this case the finger is withdrawn; and while the treacly fluid is flowing, the largest possible rectum bougie is inserted, until the finger in the rectum shows that it has reached the cavity, when it is withdrawn again. There is not much choice now between slow and quick evacuation. The greatest danger lies in the absorption of the exuding fluid by the raw surfaces thus made, after air has been admitted. A double catheter is passed into the *cul-de-sac* as far as it will go without force, then very slightly withdrawn, and the cavity is well washed out. More careful search is now made for the os and cervix uteri, which may be either widely dilated or almost normal. The case is then treated on the same principles as when a hymeneal occlusion is concerned; but very frequent insertion of the vaginal dilator for weeks or months is required to insure complete vaginal patency.

It may happen, however, that we may reach the globular uterus, and yet no escape of fluid occur. The uterus itself is occluded. If the situation of the os uteri is apparent, we are advised to pierce it with

trocár or scalpel. A silver catheter of small size seems to me a more fitting instrument. But, as in a case already referred to (p. 147), the globular uterus may apparently be there, but no trace of os or cervix to be found. In such a case the surface must be first scraped with the end of a director, to ascertain that there is no intervening membrane. There was one in the case alluded to, and the finger passed through into a distinct extra-uterine space, the rudiment of the vagina, but still no perceptible os or cervix was to be found. There is no remedy under such circumstances but to make one. This was done, also with the end of the director, and the finger was forced after it. The gush of retained menses followed its removal. The uterus was now washed out, and a male lithotomy tube was inserted into it and retained by tapes, being removed daily, cleaned, and returned. This patient now menstruated freely, although with some dysmenorrhœa; but I have vainly endeavoured to have her brought to town again for a more careful examination of the state of the parts. If the vaginal canal has been freely opened and the uterus well discovered, and if the symptoms are not urgent, then it would be well to wait some time before proceeding to the treatment of the uterine atresia. This would diminish the risk of septicæmia, and enable us to act slowly, as recommended below. But on no account should the delay be permitted if the symptoms of distention are severe, either at the menstrual period or during the intervals. If kept well dilated for some months, the artificial vagina acquires a mucous lining, and serves all the purpose of a natural one, even to the extent of enduring the dilatation of child-birth.

I can imagine, although I have never seen, a case where the uterine distention may be so great, and the rectal septum so thin, as to make it advisable to perforate *per rectum* before attempting the vaginal dissection.

Congenital occlusion of the uterus alone is not common, and unless the whole organ is badly developed it is generally confined to the os externum. But acquired occlusion may follow after pregnancy complicated with inflammatory sequelæ, or after the abuse of strong local applications to, incision of, and other operations upon the cervix. But even long-continued catarrhal inflammation of the cervix may lead to occlusion, especially after the menopause, and in such cases it may give rise to little indication of its existence. However the occlusion is produced, if it is during the period of menstrual life, accumulation of inspissated menstrual discharge within the uterus (*hemutometra*) is the result, and the Fallopian tubes are apt to share in this distention (*hematosalpinx*). The uterine walls may be either hypertrophied or very much thinned. Occlusion may occur after impregnation has taken place; in which case, owing to the gradual uterine distention, all trace of os or cervix may disappear, giving rise to a very awkward complication of labour. It also

occasionally happens that, menstruation having ceased, the occluded uterus continues to secrete a quantity of mucous fluid, more or less watery, which distends the organ, giving rise to the same physical signs as hæmatometra (*hydrometra*), and in still rarer cases this fluid is or becomes purulent (*pyometra*), or decomposes, giving rise to the presence of gases (*physometra*). In the diagnosis of all these tumours resulting from occlusion of the uterus, the first important point is to eliminate pregnancy. In congenital cases this presents little or no difficulty, except when there is intentional fraud, and untruthful information on the part of the patient. In the case of very old or very young patients there can also be little doubt; but during the child-bearing age, and when the occlusion is not congenital, it may be essential to wait for the evidence afforded by the rate of growth, although a very careful consideration of the signs of pregnancy (see Appendix) will generally render this unnecessary after the earlier weeks. The non-fluctuating and hard character of solid or malignant uterine or other growths, and of the solidified exudations of pelvic inflammation or hæmatocoele, should serve to eliminate them, and an examination by the sound will serve to show the non-patency of the uterine canal; or, if it overcome this, will give exit to the distending fluids. The danger of mistaking an ovarian cyst is in this way avoided. In *physometra* the clear percussion note over the tumour is very characteristic, although I have met with the same sign in the case of ovarian cysts, when decomposition and gaseous accumulation had taken place.

The higher the point of occlusion of the utero-vaginal canal, the more apt are Fallopian complications to occur, it is therefore important, in uncomplicated hæmatometra or extensive hydrometra, to promote slow evacuation when possible. If the cervix be present, it must of course be the point of entry; if not, the speculum may show a depression corresponding to the os externum; failing this, the uterus should be pierced towards its posterior part. In all these cases a long curved trocar and cannula, furnished with an india-rubber tube and allowed to act as syphon wise, as previously directed, should be used. The uterus must not be forcibly compressed, but a comfortable abdominal bandage is permissible. If the stricture be very slight, a catheter may be used instead of the trocar and cannula. Washing out of the uterus under these circumstances is inadvisable, unless sudden rigors or high temperature point to the occurrence of septic poisoning, in which case a double catheter must be used, to make sure of free egress for the fluid, and the injection must be slow and devoid of force. The opening now made must be kept patent by the frequent passage of a good sized bougie, increasing the size gradually up to No. 12 at least. This is preferable to the use of tents, or of a stem pessary.

In the presence of uterus bicornis or other uterine malformations, along with double vagina, cases are recorded of occlusion and vaginal distention on one side only (lateral hæmatometra or hæmatokolpos), and some of double affection (Schroeder, *op. cit.*, p. 59). In the event of double occlusion, the symptoms are similar to those met with in the more common or single form; but the second tumour, a first having been successfully treated, or the sole tumour when there exists one patent vagina and uterus, must be carefully differentiated from prolapse of the vaginal wall or from vaginal cysts. The former can only be mistaken through want of careful examination and of attempts at reposition; the latter may require exploratory puncture for diagnosis. Thrombus of the vagina, or pelvic abscess, or hæmatocele, have each a clear distinguishing history of their own to guide us in diagnosis. The treatment of hæmatometra of a rudimentary uterine horn (*see* Uterus Unicornis) by abdominal incision belongs to the surgery of the, perhaps, not very distant future. For the diagnosis and treatment of mere narrowing, without complete atresia (*stenosis*) of the cervical canal, the reader is referred to Chapter VIII.

CHAPTER VII.

OVULATION, MENSTRUATION, AND THEIR DISORDERS. Amenorrhœa. Suppressed Menstruation. Scanty Menstruation. Menorrhagia. Metrorrhagia. Dysmenorrhœa. Vicarious Menstruation. The Menopause.

FROM a strictly scientific point of view, the consideration of the so-called "functional" disorders of menstruation should be delayed until we have discussed those uterine or ovarian diseases of which they are for the most part mere symptoms and evidences. But there are certain practical advantages to be derived from an opposite course; and my experience as a lecturer has taught me that it is preferable to speak first of the disorders and difficulties connected with the function of menstruation, taking every care to avoid the serious error of allowing symptoms of disorder—amenorrhœa, dysmenorrhœa, and the like—to be considered as separate diseases, apart from their often numerous causes.

The uterus, Fallopian tubes, and ovaries are all more or less concerned in the function of menstruation, and this function is most intimately, although perhaps not inseparably, connected with the function of the ovaries alone—ovulation.

Ovulation.

By ovulation we understand the production and expulsion of an ovum or ova by the ovaries, there being still every reason to believe that such expulsion obeys, as menstruation does, a very distinct law of periodicity. Within the stroma of the ovary there are found, from the earliest period of extra-uterine life, microscopic appearances, which indicate the presence of enormous numbers of small follicles, the earliest stage of the Graafian vesicles. Heule estimated these as amounting to 70,000 in one ovary which he carefully examined; and it would appear from the researches of Baschoff, Fowles, and others, that at birth the ovaries contain nearly all the ova which are to be expelled in after life, although new ones may be formed for a year or two subsequent to birth. As the time of puberty approaches, some of the Graafian vesicles become more apparent, especially one of these bursts and discharges its surface. At every subsequent monthly

period thus occurs, and at each, the ovum is received into the fimbriated trumpet-shaped end of the Fallopian tube, and is so conveyed to the uterus. This is reached after several days, and if no impregnation takes place, the ovum disappears along with the uterine and vaginal secretions. The cicatrix left in the ovary undergoes the changes which give rise to the corpus luteum, true or false, and finally leaves but a faint puckering. The combination of such puckerings during months and years of sexual life gives rise to the altered appearance of the adult ovary as compared with that of the adolescent girl (fig. 92). This is the generally recognised course of matters in ovulation, but there is hardly a single point in it which is not considered as still *sub judice* by the physiologists; indeed, it would be well if some of their number, who are not very sparing in their criticisms of the inexactitudes and discrepancies of practical medicine, would furnish us with a little more exact certainty about a function and a phenomenon deserving of their fullest consideration. Strong doubts are thrown by some upon the question of periodicity as affecting ovulation. No one can yet tell us beyond dispute whether



FIG. 92. — Human Ovary. A, from an Adolescent; B, from an Adult (Young).

impregnation affects the recently discharged ovum, or that which follows a month later. The exact process by which the Fallopian tube grasps the ovary, and attracts the ovum to the uterus, is still not clearly defined. All that we can say is, that vascular erection of the fimbriae occurs at the right time, and that capillary attraction towards the uterus seems to aid the action of the cilia of the tubes. The relation in which ovulation and menstruation stand to one another lies also in the debatable land. That ovulation may exist without menstruation is absolutely certain, for pregnancy has often been observed before any sign of menstruation had occurred, and daily happens in women who are not menstruating, owing to the fact of lactation going on. The converse is also true, although its occurrence may be less common. When both ovaries have been removed, menstruation has gone on for several periods with fair regularity. This may, however, and I think with justice, be fairly attributed to the lingering effect of the acquired habit of periodic engorgement, for, as a rule, removal of the ovaries involves speedy cessation of all the symptoms. In women who continue to menstruate many years after the apparent

cessation of conceptional power, and who are not the subjects of disease, we very probably have this habit continued after the generally supposed periodic stimulus of ovulation has ceased. There is reason to believe, also, that in certain cases of sterility, and of dysmenorrhœa, these are due to arrested, or, as Farre termed it, "disappointed ovulation," from thickening of the ovarian coverings. These pathological causes of dissociated ovulation and menstruation need, however, in no way invalidate the law that the occurrence and persistence of menstruation are in the first place due to, and mainly kept up by, ovarian stimulation. No ovariectomist has, so far as I am aware, ever discovered a case where a woman who has never menstruated previous to operation, has done so after the removal of both ovaries. When the Fallopian tubes are occluded by adhesions, ovular expulsion is incomplete, and small and repeated attacks of hæmatocele are sometimes undoubtedly due to this cause. Extra-uterine gestation is another result of incompletely ovular expulsion. In considering the subject also of dysmenorrhœa (difficult or painful menstruation), we shall not forget to notice that in some instances it is the ovulation, rather than the menstrual phenomena, with which we have chiefly to do. It is not necessary here to attempt to trace the rôle which the ovum or its surrounding vesicle plays in the formation of certain ovarian tumours.

After this brief mention of ovulation as a separate function, and of its disorders, I shall take the liberty of considering it, as we are compelled clinically to do, as only a stage in the series of menstrual phenomena.

Menstruation.

The ordinary features of menstruation are well enough known, but, with regard to its intimate nature, physiology leaves us nearly as much in the dark as it does with respect to that of ovulation. That the periodic secretion comes from the uterus, at least mainly, is beyond a doubt, but how, or by what changes in the organ it is accompanied, is still a matter open to discussion. The existence of engorgement of the uterus, including its mucous membrane, may be taken as admitted on all hands, as also may the fact that whatever important changes occur in the mucous membrane are confined to the body of the uterus. This membrane becomes swollen and hypertrophied to a considerable extent at each period. At one time the blood oozing from this source was looked upon as a secretion, then (as by Coste) as a transudation without any breach in the capillary tubes, then (as by Farre) as an escape through certain permanent vascular orifices. Pouchet adopted the view that a considerable depth of the mucous membrane itself is shed. Tyler Smith and

Handfield Jones demonstrated that, in many instances at least, almost all trace of the membrane disappeared from the uterine body during menstruation, blood oozing from the subjacent tissues; and John Williams has so thoroughly worked out and illustrated this view, that I believe it is now generally adopted by gynecologists as a basis for pathological views or therapeutic action. But there seems to be no finality in such matters. Kundrat has all along maintained, and still maintains, that only the superficial layer is shed, owing to its undergoing fatty degeneration. More recently, Leopold, after careful examination in the dead subject, denies the existence of any fatty degeneration, while Moricke, scraping the uterus of living subjects with the curette, leads us back to where we began, and finds that no portion of the mucous membrane disappears at all. No wonder that Thomas expresses concerning this discussion what is felt by a good many other gynecologists, when he says—"I prefer to avoid it." The difficulties of the whole subject, and the absence of any real solution of most of them, are very thoroughly and recently detailed by Leopold (*Archiv für Gynäkologie*, xxi. 3). Using such slight powers of deciding in the matter as I possess, I am inclined to accept Williams's views (*Obst. Jour.*, vol. ii.), based on those of Tyler Smith, as being not far from the truth, and as furnishing at any rate the best working hypothesis. I accept also in the same way the general principle of ovarian excitation as a stimulant to menstruation. The cause of the periodicity of menstruation, or, if it is preferred, of ovulation, or of the general condition which accompanies these, is to me as yet an unsolved mystery.

The periodic menstrual discharge is a phenomenon which is liable to very serious departures from its normal standard, such departures being often due to general, often to local, disease, and, not infrequently, in their turn, the cause of other general or local diseases. Tait has, I think, fairly proved that ovulation undergoes similar irregularities, from which, however, he draws deductions not yet by any means generally received. Departing from my general plan, I think it will be well to add a few more words as to the phenomena observed in health. At every returning monthly period there is an increase in the nervous and vascular tension of the whole system, the former being shown by an increased liability to all forms of explosive nerve disease, and the latter, not only by the feelings of the patient, but by actual sphygmographic tracings of the pulse. Barnes and Faneourt Barnes have shown that this vascular tension begins to rise some three days before the occurrence of discharge, and subsides in about three days from its first flow. Dr Mary Jacobi had previously described the regular sphygmographic wave, and Stephenson of Aberdeen also publishes some suggestive observations on the subject, although not quite coinciding with Barnes as to the relation of the

discharge to the height of the pulse tension. A striking example of the general tension occurring at the menstrual periods is met with in periodic fulness of the thyroid gland. I have seen one or two instances in young girls where the appearance of exophthalmic goitre was present, but disappeared on the complete commencement of menstruation. The common symptom of swelling and uneasiness of the breasts shows not only this general vascular tension, but also the special sympathy of these organs with the uterus. The pelvic engorgement existing in all cases doubtless corresponds in time with this heightened systemic vascular tension, and the uterus can be felt *per vaginam* to be heavier and more swollen than usual, while even the cervix is more puffy and patulous. The Fallopian tubes participate in this engorgement, and their extremities cling to the ovary. Lawson Tait states that this occurs at the menstrual period, and that it does not occur during the inter-menstrual period, whether there is a ripe vesicle or not. These functional changes in the tubes are quite sufficient, I think, to show that "they are most markedly under the same periodic influence as that which produces the menstrual flow," but surely not "that they are themselves its cause."

The menstrual fluid consists of red blood mixed with varying quantities of acid vaginal mucus, and it is the presence of this mucus which prevents coagulation. Coagula are an indication, therefore, of an abnormal amount of sanguineous discharge, beyond what the vaginal mucus can keep fluid, or of some cause of retention of the flow. In most women there is a slight odour special to this discharge, and in some it is, during the whole of life, marked and offensive. I think I have seen this somewhat diminished by the administration of ergotine (Bouyeau's extract, gr. ii. ter die, in pill). This probably acts by preventing retention in the uterus, but should not be used without due consideration. In the commencement and at the close of menstrual life, the mucous may predominate over the sanguineous element, and in delicate young girls, or where menstruation is temporarily in abeyance, or towards the menopause, it may solely represent the flow; but it must not be confounded with ordinary leucorrhœa. The duration of the flow varies much, say from two to six or seven days, within the limits of health. The quantity also varies much, say from two or three to eight or ten ounces, but this is difficult to ascertain. If, in a woman of cleanly habits, only one or two napkins suffice for twenty-four hours, the quantity is certainly scanty, while if six or more are required it may be considered over-abundant. From thirteen to fifteen is the average age for commencement in this country, but there are great variations here also. Hot climates, luxurious habits, and precocious experiences tend to promote earlier appearance, but it may occur in the absence of any of

these. Exceptionally early menstruation, and even pregnancy as early as from ten to eleven are recorded. Kussmaul mentions a case of impregnation occurring at eight years. A discharge of blood in very young infants has not infrequently been met with. I have seen two instances where this occurred slightly two or three times, with fair periodicity, and then disappeared; and I believe it has occurred persistently from the age of one year. The time of cessation (menopause) varies also within wide limits. Forty-five is usually considered to be about the mean time, but many healthy women cease ten or more years before this, and others continue with perfect regularity till fifty-one or fifty-two. The periodicity of the discharge, while generally observing the law which imposes a lunar month or twenty-eight days, also varies within certain limits. I can vouch for the fact that some women can, for long periods, reckon the recurrence of the discharge by the calendar month and not the lunar, and thus where an entry is regularly made in the almanac. It is probably an instance of mental expectancy influencing a physiological function. When the whole period, from the commencement of one discharge to the commencement of the next, falls much below the twenty-eight days, morbid conditions are certainly approached, but, in the absence of any deterioration in health, disease cannot be asserted to be present. Attempts have been made to formulate certain types of periodicity, such as the twenty-one day type, but not, I think, with much success. I can only recognise frequent variations, and do not see what is to be gained by collecting a percentage of twenty-seven day cases and calling it a type. We might do the same, equally fruitlessly, with types of gestation.

We have already noted the occurrence of a certain amount of systemic disturbance, as shown by nervous and vascular tension, and this must be considered as part of the physiological state; hence there are few women who are not somewhat unwell, and do not understand the euphemistic term of "being unwell." Some *malaise* is experienced from distention of the pelvic vessels and of those of the sympathetic mammae, or of the nerve centres, rendering the woman, for the time, less capable of sustained mental or physical exertion. These symptoms, lassitude, back-ache, irritability, headache, &c., vary much in degree, up to the point of rendering the ordinary duties of life a burden, and requiring temporary but absolute repose of body and mind. Those few women who are entirely exempt from them, and who endeavour by their example to set the fashion to their sex in the way of disregard of such frailties, in educational or other pursuits, may be fitly compared to those men, mostly of a past or passing generation, who are able to impose an equally fallacious standard of alcoholic toleration on the male sex.

There is a stage, although a very indefinable one, at which the severity

of these symptoms, or changes in the character, or amount, or frequency of the discharge, must be held as bringing the case within the domain, and as requiring the title of disease. And here arises a difficulty involving some sacrifice of scientific propriety to clinical necessity. Nearly all the phenomena which we must describe as disorders of menstruation are mere symptoms of something lying behind, of systemic diseases, or of local affections yet unmentioned. The description of a mere symptom as a disease is highly unscientific, yet in no department of medicine can this be entirely avoided. We no longer have separate treatises on the jaundice, or cough, or paralysis, but we still, and that with propriety, may have them on phthisis, or Bright's disease, or diabetes. We treat them to a certain extent as diseases, and speak of their causes and remedies as we must do of those of menstrual disorders, endeavouring, the while, to bear ever in mind that the nearer we can approach to the behind-lying causes of the apparent phenomena, the more scientific and the more successful will our treatment become.

Disorders of Menstruation.

The menstrual function, or at any rate its ordinary manifestations, may be absent, deficient, excessive, or accompanied by abnormal symptoms: and these four natural divisions of the subject may be further subdivided to some useful extent. Thus we must say something about the following:

1. Amenorrhœa, or entirely absent menstruation.
2. Arrested, or suppressed menstruation.
3. Scanty menstruation.
4. Menorrhagia, or excessive menstruation.
5. Metrorrhagia, or irregular uterine hæmorrhage.¹
6. Dysmenorrhœa, or painful or difficult menstruation.
7. Vicarious menstruation.

Amenorrhœa.

Absence of menstruation, as a symptom of closure of the genital canal, at any point, has already been referred to (chap. VI.). Under these circumstances the phenomena of periodic vascular and nervous tension, with more or less of the discomfort commonly accompanying them (menstrual mœlmen), are met with at or about the usual age. These, instead of being followed by the normal discharge, pass away from time

¹ This is not necessarily a disorder of menstruation at all, but while treating of menstrual disorders mainly as symptomatic, it is convenient to notice it here.

to time, until they begin to give place to the symptoms of intra-pelvic pressure or abdominal pain and distention already described. There is already a presumption in favour of some mechanical obstruction, by the time that the patient is brought for advice. If there is no doubt as to the existence of molimen, there can be no doubt also of the necessity for some kind of physical examination. At first the abdomen is carefully palpated to see if there is any perceptible tumour. The discovery of this would compel immediate recourse to further and internal examination, no matter how young the patient, but in the absence of any such swelling it is permissible, if the symptoms are not at all urgent, to wait for a short time, and try the effect of treatment such as is recommended when little or no molimen is present. This failing to produce any result, an examination *per rectum* is to be proposed. By this means we can at once ascertain the presence of any accumulation of menstrual secretion, and can then proceed, if necessary, to the further examination by the vagina. The use of anaesthesia is very desirable, permitting as it does, without pain, a thorough bi-manual examination of the pelvis. The occurrence of atresia being established, it must be treated on the lines laid down in the previous chapter.

But in the great majority of cases of amenorrhoea, there is no well-defined, if any, molimen, and nothing to lead to the supposition that there is secretion taking place and mechanically retained. The patient has simply arrived at, or passed, the normal age for menstruation, and for that reason alone, or because she is out of health, a fact always attributed by the patient's friends to the amenorrhoea, she is brought for advice. Here an examination must be the exception instead of the rule. If marriage is contemplated, or if the patient is old enough to have acquired the right to ask for accurate information, then it is of course demanded, but otherwise, it must be borne in mind that the cause of such retarded flow is usually constitutional, and that no young girl should, while this is still probable, be subjected to an examination of the kind required for a complete diagnosis. If, by means of examination, we detect a complete atresia, but without distinct molimen, and with no sign of retention, I have already strongly counselled non-interference. Nothing but an approaching marriage and the determination to proceed with it, after all has been explained, would justify the attempt to make a vagina in the absence of all evidence of uterine or ovarian functional existence; I should personally object very strongly to operate even under these circumstances. But in complete amenorrhoea, examination may detect, not atresia, but imperfect development of the uterus, the infantile uterus, to be afterwards described (Chap. VIII.), with its usual accompaniment of undeveloped ovaries. In such a case, also, I would advise that nothing should be done, surgically at least. Menstruation, if established

under such circumstances, will be fitful, painful, and productive of far more mischief than amenorrhœa. If, however, after a time, nature attempts to carry on the function, and that fitfully, painfully, and scantily, we shall be justified in using such means to assist in the process as are described when speaking of the infantile uterus or of dysmenorrhœa. In the absence of an examination, or in the event of our finding no mechanical obstruction, or the absence, or rudimentary condition of organs, constitutional treatment must be tried, and will nearly always succeed. The utmost endeavour must be made to promote the *mens sana in corpore sano*. Early hours, nutritive food, a full but not excessive amount of sleep, thoroughly ventilated homes, or workshops, or school rooms, avoidance of over work or over-education, out-door exercise in some form, warm woollen under-clothing and hosiery, daily bathing in water as cold as can be comfortably borne, and when this is followed by good reaction, careful attention to the bowels, without purgation if possible—these, combined with the judicious use of cod liver oil, iron, manganese, arsenic, strychnine, or quinine, constitute the true promoters of menstruation, or emmenagogues, in simple amenorrhœa. It is well when mothers can be persuaded to avail themselves of these alone in the case of their young daughters. There are certain drugs which have the reputation of a specific action on the menstrual secretion, but I prefer to reserve the mention of these until we speak of their more fitting sphere of action in arrested or deficient menstruation. The departures from general health which most frequently account for late or absent menstruation will also be more fully mentioned there. The appearance of molimen must be watched for, and its advent should be the signal for the use of a warm or even hot hip bath, or of an injection of warm water into the rectum at bed time, for a few days, or until the flow appears.

Arrested Menstruation (*Suppressio Mensium*).

Here the flow has been established to some extent, or for a considerable time, but its regular occurrence is interrupted, and that sometimes suddenly, at other times gradually, from some cause, often obscure, sometimes apparent enough.

These causes may be classified as follows:

1. Constitutional deficiency.
2. Diseases of, or leading to, mal-nutrition—phthisis, Bright's disease, &c.
3. Anæmia or chlorosis, constitutional or acquired—from hæmorrhoids, miscarriages, &c.
4. Over-work and over-education.

5. Change of climate, especially from heat to cold.
6. Mental causes—fright, anxiety, home sickness, &c.
7. Acute diseases—fevers, pneumonia, pelvic inflammations, &c.
8. Cold.
9. Super-involution of the uterus.
10. Acquired uterine or vaginal atresia.
11. Ovarian diseases, cystic degenerations, &c.
12. Pregnancy and lactation.
13. The menopause.

This list could easily be extended, but there are few causes of arrested menstruation which are not included in one or other of its items. It will afterwards be seen that many of the same causes, the first half of them especially, give rise, in certain circumstances, not always very easily differentiated, to the opposite condition of menorrhagia.

The same constitutional delicacy which leads to retarded menstruation or amenorrhœa, will often lead to its temporary arrest, especially during the first few years of menstrual life, and it will require the same constitutional treatment, while it equally contra-indicates local interference or specific drugs.

The advent of more defined and serious affections, such as Bright's disease and phthisis, is so often heralded, and more often followed by gradual or almost sudden suppression, that the apparently causeless occurrence of menstrual cessation should, in the absence of pregnancy, lead to careful and repeated examination of the more important viscera or of their functions. The opposite condition of over-menstruation is no less common under these circumstances, and is of even graver import, from its exhausting tendency. Under no circumstances should menstruation be forced while there is even a suspicion of the existence of such affections.

Anæmia in all its forms is productive of the same opposite results, and demands the same cautionary remark. The restoration of healthy blood by judicious nutriment and ferruginous tones is called for, whether the anæmia is primary, or due to any form of hæmorrhage, or to previous menorrhagia or leucorrhœa. The action of manganese (mang. ox. præcip., gr. x) in such cases, with or without iron, is not mythical. I doubt whether the opposite condition of plethora ever produces menorrhagia or suppression except as a condition secondary to more definite local congestive affections, but where it is met with, and in the absence of other indications, free saline purgation can do no harm.

Over-physical work, especially in the case of sempstresses, shop assistants, and young "general servants," and over-mental work, especially in schools, is a fertile source of menstrual disorder, including suppression,—the remedy is often more obvious than attainable. I have no

experience of agricultural or mining workers, but I believe the former are less liable to be thus affected than their urban sisters.

Change of climate, when great, has a marked effect on menstruation. English women in India suffer, with few exceptions, from exhausting menorrhagia or leucorrhœa, and some women are so sensitive in this respect that a change from town to country, from the seaside to inland situations, or the like, will produce marked and immediate effects. Such cases, whether of increased or diminished flow, are idiosyncratic and obey no general law, and if the change of residence is inevitable, we can but attempt to modify its action by counteracting changes in the general hygiene.

Mental conditions are a fruitful cause of suppressed menstruation. Fear, or sudden joy, may cause this to be sudden, and wearing anxiety may cause it gradually. Nostalgia, or home-sickness, in the case of school girls or young domestic servants, though it has very often to bear the blame which is due to injudicious education or over-work at the periods, may act in this way; and the dread of pregnancy in the unmarried, or the expectation and hope of it in the recently married, may bring about a symptom which serves to obscure the real diagnosis.

A similar suppressive effect is often seen during acute diseases, — during the zymotic affections or inflammations of the important viscera or their coverings. The suppression thus acutely induced may continue long after the mental or febrile conditions just mentioned have passed away. At the time of acute suppression, if the patient is otherwise in a fit state, the hip or hot-water bath, or hot rectal injections, or hot vaginal injections (105°), or hot applications to the extremities, may restore the flow. If the suppression continues, the case will by and by be suited for the use of specific remedies, so far as these are of any value.

Cold, in the form of wet feet, sudden chills, continued exposure, damp or insufficient day or night clothing, or otherwise, may prove suppressive during the course of the flow, and, like other sudden suppressions, may give rise to very serious symptoms. Pelvic congestions or inflammations, and similar affections of other viscera, are not infrequently due to this, and a great variety of anomalous nervous symptoms sometimes follow in its wake. What is true of cold in its other medical aspects is true here also, — it may be the exciting and sole cause of disease; but unless very severe, it requires also some predisposing cause. This may consist of diminished tone from pre-existing and long continued causes, of temporary depression from over-fatigue, or of reaction from mental or bodily stimulation. The immediate or subsequent treatment of suppression from cold is similar to that necessitated by the two previous causes.

Super-involution of the uterus after pregnancy and delivery, in the

course of middle life (*see* Chap. VIII.) is not a very common occurrence, and when it does happen it is most probably accompanied by similar changes in the ovaries. It is a matter for very careful consideration whether a woman in whom this has occurred should be treated as one in whom the menopause has prematurely arrived, or as one who has temporarily returned to the pre-menstrual period. The presence of menses would largely determine the question in favour of the latter view, and, of course, the age of the patient also; but under ordinary circumstances, beyond careful attention to the general hygiene, it is advisable to leave the decision to nature.

As regards atresia of the vaginal canal or cervix uteri, produced by traumatic or inflammatory affection, there is nothing to be added to what has been already said under the heading of "Congenital Atresia," or may be incidentally said when treating of disease of the cervix uteri. It will be seen that I have not thought it necessary to tabulate separately the causes of suppressed menstruation and of merely suppressed menstrual flow.

Cystic or other degenerative affections of the ovaries, whatever be our theory as to the mutual relations of ovulation and menstruation, tend to diminish or arrest the latter phenomenon. These organs, however, being double, the most extensive disease of one side may coexist with free menstruation. When both ovaries are affected to the extent of destruction of the normal tissues, arrested menstruation follows sooner or later, and the temporary exceptions are easily accounted for on the principle of periodic habit. The existence of such exceptions, however, and the impossibility of telling how far either or both ovaries are affected, render this symptom of wholly or partially arrested menstruation of less value than it would otherwise be in the differentiation between ovarian and uterine or other tumours.

All the previously named causes of arrested menstruation may be considered as pathological; but we must constantly bear in mind the possibility of physiological arrest due to Pregnancy, Lactation, or the Menopause. One of the most frequent and difficult problems the physician is called upon to solve lies in the differentiation of the arrest due to pregnancy from that due to other causes; and it cannot be too strongly impressed on the young practitioner, that mistakes on this point are too often fraught with disaster to his patient and disgrace to himself. I have elsewhere appended the signs and symptoms of pregnancy in a separate form (*Appendix*) for the purpose of reference, when speaking of the diagnosis of several diseases. The only way to avoid such fatal mistakes as I have alluded to, in early pregnancy, is to resist the temptation to a positive and immediate diagnosis, or to any active treatment, or to intra-uterine examination, until time has been given to reconsider and recompare the

symptoms and signs, and to allow of watching whether the developments of pregnancy follow in their due time and order. *No matter who the patient may be*, pregnancy must be regarded as possible; and this possibility must influence all action, or rather must compel inaction until all doubt is solved. With the married, the patient should be made to share in the belief of this *possibility*; with the unmarried we must be reticent, but none the less cautious. In the latter case physical signs must alone be depended on, and in all cases, little weight must be attached to mere sympathetic disturbances, there being not a single symptom of the kind which may not occur independently of pregnancy. The not infrequent occurrence of anomalies in menstruation during pregnancy must also be carefully borne in mind.

As a rule, menstruation is absent for several months during lactation; but there are very many exceptions, and ovulation and impregnation, or ovulation alone, may certainly occur at a very early period after delivery.

The very early occurrence of the menopause may lead to difficulties in diagnosis; but the fact requires to be borne in mind that it may occur at the age of thirty, or even less, and that independently of any disease, or of super involution or other local affection. This early cessation is often sudden, more often gradual, and unaccompanied by much sign of systemic disturbance.

Treatment.—So far, it will be observed that, in considering the causation of arrested menstruation, the appropriate treatment has almost followed as a natural sequence, and that I have said little or nothing of specific treatment, medical or surgical. When either amenorrhœa or suppressed menstruation is not due to atresia, or is not accompanied by severe pain, mechanical treatment is seldom advisable. The use of an intra-uterine stem pessary for the purpose of exciting by its presence such an amount of *physiological attention*—to coin an expression,—to the uterus and ovaries, as will lead to further development, is rarely to be recommended. Such instruments have their use, as we shall see shortly, but not in painless amenorrhœa in the virgin. In the married woman, when she is very desirous of offspring, they may be very cautiously tried, but not unless she is under very careful supervision, and with all the precautions afterwards to be enforced. It is very easy, by lighting up inflammatory mischief, to make the remedy infinitely worse than the disease. The same observations apply to attempts to excite menstruation by rapidly dilating the cervix with one of the dilators afterwards to be mentioned, and thus affording a local stimulant. The painful and ineffective menstruation thus sometimes set up is a poor substitute for mere painless absence of the phenomenon. The application of electricity in such cases is less objectionable; but it is only fair to the patient to remember that its use

must be long continued, and that its success is very problematical. The constant current is the preferable form. In young girls the electrodes may be applied firmly over each ovarian region, and one of them occasionally and alternately to the spine. In the married, or when electricity is used for other affections than absent or scanty menstruation, an electrode in the form of a sound, insulated by shellac or otherwise, except at a couple of inches from the point, must be introduced into the uterus itself. If such introduction produces little or no irritation, the plan may be fairly tried for several weeks, but otherwise it must be abandoned. In all cases, the length of time required, and the great possibility of failure, must be explained to the patient by the conscientious practitioner. Neglect of this rule, in more than one form of uterine treatment, has brought much opprobrium, not always undeserved, on gynaecological practice. The external application only is not quite open to the same remark, as it can after a time be entrusted to the patient and her friends. The application should be almost daily, and but a small number of cells should be used—not more than twenty—for some ten minutes at a time. I may qualify what I have said above by stating that I have once, and only once, seen this treatment of a small uterus followed by healthy menstruation and several natural pregnancies.

The so-called emmenagogue drugs should never be used where there is the faintest suspicion of pregnancy, nor where exhausting diseases, such as phthisis, are presumed to lie at the root of the evil. I do not of course refer to general tonic remedies, or mild aperients, or the like, which can only be considered as emmenagogues in an indirect sense.

The list of emmenagogues, ancient and modern, is a very formidable one, and I can only refer to a few which have some claim to authoritative recommendation, or of whose action I have some personal experience.

- 1 *Aloes*. Sharply purgative doses occasionally, and smaller but regular doses in habitual constipation and sluggishness. An ounce of the decoction in a warm rectal injection at the expected period, where such injections are recommended above.
- 2 *Myrrh*. 3 to 10 grains, generally given with aloes. Action doubtful.
- 3 *Ergot*. 3 grains of Honjean's ergotin in pill, or 20 minims of the ext. *ergot*. *Infusd.*, or 1 to 4 teaspoonfuls of Tanret's syrup of ergotamine, *ter die*. Beware of pregnancy.
- 4 *Peruvianum* of *Pilulash*. -2 grains in pill *ter die* (Ringer, *Lancet*, vol. i., 1883, p. 7). Safe, and I think occasionally useful. R. Pot. permang.: kaolin, a. z. gr. ii., vaselin. q. s.
- 5 *Serin*.—Ol. *sabinæ*, ℥ x., in mucilage.
- 6 *Rue*.—Ol. *rutæ*, ℥ x., in mucilage.
- 7 *Cantharides*. Tinct. *canthar* ℥ v. ad xx. Dangerous.
- 8 *Terebinthine*.—Ol. *terebinth.* ℥ x., in mucilage.

The last four are apt to be severely irritating to all the mucous surfaces, and apart from this, their specific action is more than doubtful.

9. *Aconite*.—Tinct. aconit., \mathfrak{m} iiv. *ter die*. Avoid its dangerous alkaloids.
10. *Belladonna*.—Tinct. belladon., \mathfrak{m} v., or ext. belladon., gr. $\frac{1}{4}$ to $\frac{1}{2}$.
Both the above are of use in sudden suppression with pain, spasmodic or congestive, but they are not otherwise emmenagogues.
11. *Bromine*.—The bromides in full doses are of use when suppressed menstruation is complicated with pain or strong morimen.
12. *Apoc.* 3 to 6 minims in perles or capsules. I think, though I say so with reserve, that I have seen something like a specific action from this remedy in suppression, never in amenorrhœa.

Besides the above, I have not thought it worth while to discuss the emmenagogue properties of gumiæ, mentha pulegium, galls, achillea millefolium, muriate of ammonia, artemisia, crocus, pulsatilla, sanguinaria, taraxacum, and a host of others. Their use and application is now chiefly relegated to domestic pharmacy or to the so called eclectic physicians, whose chief characteristic is the careful selection of every kind of fashionable -opathy, or -ism, or popular fallacy, to the exclusion of rational and scientific practice. The use of the natural mineral waters, in combination with their more or less healthy surroundings, must not, however, be ignored as valuable curative means, to those who can afford to give them a sufficiently long trial. Harrogate, Gisland, Strathpeffer, and Moffat in Britain, and Schwalbach and Spa on the Continent, may be instanced as acting indirectly as emmenagogues. The hot-water springs of Wiesbaden, Tarnap, and Aix-les-Bains are valuable as baths, and Kreuznach in Germany, and Woodhall in England, have valuable properties when amenorrhœa is due to the effects of strumous or syphilitic cachexia, or to pelvic disease with chronic exudations. The last of these springs might be made a valuable addition to our national health resorts. In sudden suppression, accompanied at the time, or followed at a subsequent period, by much pelvic engorgement and febrile symptoms, a few leeches applied to the perineum, or better still, in suitable cases, a free scarification of the cervix, will greatly relieve symptoms, and is sometimes followed by the return of the natural flow.

Scanty Menstruation.

This, which is sometimes called "spamenorrhœa," apart from its frequent concomitant dysmenorrhœa, need occupy little of our time. If we eliminate pregnancy and lactation as physiological, and atresia as a pathological cause of arrested menstruation, every one of the causes of that condition may occasionally act partially, and produce scanty instead of completely arrested flow. This may show itself either in a notable diminution of the amount of the discharge, or by substituting the mucous for much of the sanguineous element, or by prolonging the

intervals. In whichever way scanty menstruation shows itself, apart from menstrual pain, it is amenable or unamenable to the same treatment as amenorrhœa or suppressed menstruation from the same causes.

Menorrhagia and Metrorrhagia.

By the former of these terms we understand either undue frequency or undue quantity of the menstrual discharge, periodicity being maintained, however, with fair regularity by the latter we mean the occurrence of sanguineous discharges, not only at the regular periods but also at irregular intervals between them. The distinction is a very important one, and might be held to forbid our treating of the two conditions together, or of the latter at all as a disorder of menstruation. Practical considerations, however, make it desirable to do so. We find that quite as much as, or even more than is the case with amenorrhœa, these symptoms are frequently capable of being traced to some uterine or ovarian affection. Especially is this the case where they occur during middle or elderly life.

At the first commencement of menstruation, and towards its close, it is not uncommon to have the secretion increased in amount or frequency, and this sometimes alternates with the opposite conditions of arrested or scanty menstruation.

We may look upon such cases as, in a sense, functional disorders, and the same thing may happen, though less rarely, at other periods of life, but even here, though careful investigation may fail to discover any local lesions, the increased flow must still be considered as symptomatic of some constitutional state lying behind it.

Causation. Referring to the causes of arrested menstruation which have been mentioned (p. 162), we find that several of them may with equal propriety be enumerated as leading to menorrhagia, though comparatively seldom to metrorrhagia. We may have

1. Constitutional delicacy.
2. Diseases of, or caused by, mal nutrition, Bright's disease especially.
3. Anæmia, including scurvy and the hæmorrhagic diathesis.
4. Over-work or over-education.
5. Climatic changes.
6. Mental disturbances.
7. Acute diseases, rarely.
8. Plethora or full habit of body.
9. Cardiac affections, especially with hypertrophy or dilatation.
10. Hepatic, or other visceral disease, even mere constipation, leading to venous obstruction, especially when a sequel of chronic alcoholism.

It is not difficult to understand how all the foregoing causes, which lead to changes in the blood of a more or less deteriorating character, or to excess of the nerve tension observed in normal menstruation, or to variations in the general or local circulation, should produce opposite effects. But it is often very difficult to say why, in any individual case, the one result should follow rather than the other—menorrhagia or deficient menstruation. The cause being recognised, however, or strongly suspected, and the absence of local organic causes being as far as possible ascertained, the treatment, medicinal or hygienic, follows the same lines in either case.

In the vast majority of cases of decided menorrhagia in women who have reached the middle period of sexual life, we have some local cause which demands investigation and treatment. This is, above all, the case where metrorrhagia is present even in a slight degree. No such case should, therefore, ever be allowed to continue long without our insisting on a sufficient local examination.

To enumerate the occasional causes of menorrhagia, most of which may also occasionally give rise to metrorrhagia, will be to tabulate many of the diseases upon the study of which we are just entering. It is therefore impossible to do more than merely tabulate them here, reserving all discussion as to their *modus operandi* and their treatment. In addition to the causes named above, we may have

11. Chronic inflammation of the uterus with hypertrophy.
12. Subinvolution of the uterus.
13. Fibroid growths (fibro-myomata) of the uterus.
14. Polypi of the uterus.
15. Malignant disease of the uterus.
16. Endometritis with chronic granulations.
17. Inversion of the uterus.
18. Displacements of the uterus.
19. Granulations and lacerations of the cervix.
20. Retained products of conception or menstruation.
21. Congestive affections of the ovaries, Fallopian tubes, or pelvis generally.

In addition, again, to these, we must bear in mind that diseases of the vulva or vagina, which cause occasional hæmorrhage, may give rise to the suspicion of menorrhagia or metrorrhagia, until an investigation takes place. It is always an important point, when menorrhagia is present, to decide whether an immediate local examination is required. In the case of the young, the symptom may fairly be considered for a lengthened period as of constitutional origin; about the time of the menopause, in the unmarried, this is also permissible for a short time, but only in the event of the patient being under regular observation. In all other cases

an examination is desirable, and the responsibility for delay in this respect should at any rate devolve on the patient.

It seems unnecessary to say more here about the *diagnosis* of menorrhagia, the fact is self-apparent, the cause must be differentiated, if necessary, by every means at the disposal of the physician.

The treatment might almost be summarised in a similar manner. The mere loss of blood must be combated by diet as generous as the patient can assimilate, and by the usual blood restoratives; but where the cause remains doubtful, or where its removal must be a work of time, measures may be required to arrest, or at any rate to diminish, the flow. Such remedies may be divided into those which are local and those which act through the general system. As local remedies, we employ

1. *Cold.* This may be applied in the form of ice, or ice-cold water applied to the vulva, or injected into the vagina. Great caution is necessary in using this means in cases which merely approximate to increase of function. Coolness of diet, clothing, &c., are allowable enough, but the application of extreme cold should be reserved for those cases which are genuine hæmorrhages.

2. *Heat.* A very decided effect upon severe hæmorrhage is often produced by the application of heat to the spine, by means of Chapman's india-rubber bags. Apart from obstetric practice, and in the absence of dysmenorrhœa, I have no experience of the internal use of hot water as an anti hæmorrhagic means, pure and simple, but I should not hesitate to try it, according to Emmet's method, in cases where the other means failed. In many cases, as will be seen, it is available as the most satisfactory treatment of the local cause, especially in all cases of pelvic engorgement.

3. *Plugging the Vagina.* - There is no doubt that by a firm vaginal plug, by packing the vagina through the speculum, any form of uterine hæmorrhage may be arrested for the time being, provided that the uterine cavity is not sufficiently dilatable to allow of dangerous concealed hæmorrhage. But there are such manifest objections to this plan, in most of the affections which lead to menorrhagia, that it should be reserved for extreme cases, in which any step is permissible which will obviate the tendency to immediate death. A small sponge or pledget soaked in the glycerides of carbolic acid, tannic acid, sulphate of iron, or iodine, and carefully placed against the cervix, will often prove effectual, but in most cases where any form of plug is desirable it is better to adopt the plan of

4. *Plugging the Cervix Uteri.* This is most easily effected by a sponge or tulolo tent, large enough to fill the cervix, and introduced in the usual way. It must be retained in position for a short time, till expansion has fairly commenced, by a small tampon or by a vaginal dilator.

In malignant disease of the cervix, this means is, of course, seldom admissible, or where it is known that considerable dilatation of the uterine cavity exists, but in other cases it serves the immediate purpose well; and, moreover, it not infrequently brings about a permanent cure, by the absorption of cervical growths or non-malignant excrescences, and it is, in many instances, the first step in the way of thorough diagnosis.

5. *Local Astringents.* It is difficult to see how local astringents applied only to the vagina can serve any purpose in the case of intra-uterine disease, but in the form of injections, very carefully administered, or medicated plugs, or even pessaries, they are of service where cervical ulceration or malignant fungosities forbid other steps.

6. *Scorification of the Cervix.* This will sometimes cause the cessation of long-continued metrorrhagia, or even menorrhagia. Its *modus operandi* is somewhat obscure, but it will again be referred to in speaking of the hæmorrhages from fibroid tumours. It is, however, also occasionally serviceable in cases complicated with uterine congestion, and with granular non-malignant fungosities of the cervix.

Local measures applicable to the interior of the uterus can only be considered when treating of intra-uterine disease.

The above local remedies are for the most part only stop-gaps, for immediate use in severe hæmorrhage, and must never be allowed to interfere with the more permanent treatment directed against the causation of the disease.

Among the internal remedies used, more or less empirically, in menorrhagia and metrorrhagia, I need only refer to the following, premising that all those remedies which tend to promote a healthy blood pabulum may be considered as rational and indirectly curative in nearly every case.

1. *Ordinary Astringents.* These include acetate of lead, gallic acid, the mineral acids, catechu, krameria, *et id genus omne*. As subsidiary agents they may occasionally do good in chronic hæmorrhages, but I confess I have little faith in any of them. A useful precaution is to avoid spoiling the patient's digestive powers by them.

2. *Ergot.* This is an infinitely more valuable agent in every way, acting as an astringent, not in the ordinary undehned sense, but by producing tension of the whole uterine muscular tissue. That it has a similar action on the muscles of the small vessels has been abundantly proved of late years, and this has led to its general adoption as a hæmostatic in other than gynecological practice. It renders the whole uterus firm and less spongy—it acts as a compressor of every vessel in its walls, and throughout its whole area—it tends to expel clots—and is thus a valuable corrective agent in all atonic uterine states. A sense of “grasping” in the lower abdomen is often an indication of its action. Its effect upon uterine growths will be further referred to, and it is especially

useful in cases of menorrhagia caused by, or accompanying, sub-involution. If it is desirable to obtain rapid action, 1 to 3 grains of Bonjean's ergotine, or of sclerotic acid, may be injected into the fleshy part of the buttock. This will dissolve in twice or thrice its own bulk of water, and the addition of a little chloral hydrate will preserve the solution for a time from decomposing and becoming inert. A. R. Simpson's formula is ergotine, $\mathfrak{v}\mathfrak{i}$, aquæ, $\mathfrak{v}\mathfrak{i}$; chlor hyd., \mathfrak{ss} , twelve minims containing about 3 grains of ergotine. I am strongly in hope that we shall find a more certain and reliable agent than ergotine in the ergotinine, or supposed active principle of ergot, introduced by M. Tauret of Paris. My own recent experience is too slight to speak positively, but it is very encouraging. There is a solution of gr. $\frac{1}{20}$ to 20 minims, 3 to 10 to be used for subcutaneous injection, and a syrup of $\frac{1}{20}$ to the drachm; dose, 1 to 4 drachms.

3. *Quinine*. This drug will sometimes act as an oxytocic in obstetric practice when ergot has failed, and one or two grains, or five in cases of severity, administered thrice daily in hæmorrhage from sub-involution, have frequently appeared to me to act as a powerful hæmostatic and counteractor of menorrhagia.

4. *Iodide of Potassium*. This remedy will also sometimes be found to produce in a few days decided diminution in chronic menorrhagia or metrorrhagia. It acts no doubt as an absorbent of something, though it may often be difficult to say of what. Its trial would therefore be chiefly demanded where such action might fairly be supposed to be required on account of the known or supposed cause of the affection.

5. *Digitalis*, *Aconite*, and *Veratrum viride*, and probably also *Convallaria*, have, by their action on vascular or cardiac tension, an undoubted controlling power upon the circulation, and, through this, over some forms of hæmorrhage. The two former, at any rate, are indicated when uterine flow seems to be due to systemic disturbance rather than to local disease.

6. *Ipecacuanha*. This drug in full doses will sometimes cut short a post-partum hæmorrhage, though recourse is seldom had to it in the presence of more certain remedies. I once gave it with immediate good effect in an uncontrollable metrorrhagia from an intra-uterine polypus, and might possibly feel called on to do so again. I have no experience of it in minute doses.

7. *The Bromides*.—These would seem to be of use in cases where over-frequent menstruation appears to depend on ovarian irritation or congestion. I admit, however, the possibility of much fallacy here.

8. *Cinnabaris Indica*.—This has been much lauded as a specific anti-menorrhagic. As a matter of theory one would expect it to act chiefly, if at all, in similar cases to those benefited by the bromides. I have often prescribed the tincture and extract where menorrhagia and dys-

menorrhœa coexisted, and have thought I have seen benefit in the diminution of both symptoms together, but have never been able to be sure that the hæmorrhage was specially or alone affected.

10. *Iron* is, according to many writers, contra indicated in menorrhagia as tending to increase the symptoms. I cannot say that I have observed this effect myself, and, when anemia is a consequence or a cause, it may, I think, safely be used in small and digestible doses.

In all cases of menorrhagia, perfect rest and recumbency at the time of attack, with the absence of all excitants, are an essential of successful treatment. Metrorrhagia, as a symptom of uterine disease, will be further and frequently referred to. I should just mention also that in a few cases of both affections, of extreme gravity, transfusion has apparently saved life by affording the blood pabulum and cardiac stimulus which were effectual in prolonging it until means could be adopted to arrest the cause of discharge.

Dysmenorrhœa.

Painful menstruation is a symptom of such frequent occurrence that one would expect its pathology to have been clearly worked out and its treatment to be correspondingly rational and scientific, and generally agreed upon. Such, however, is by no means the case, and I know of no department of gynecology in which I find it harder to follow out my desire of giving to the reader only such facts or opinions as are based on general experience, and as furnish a sure basis for practice. True it is that every writer gives us a long list of causes, but whenever a discussion arises at any of our obstetrical societies, as for instance on the excellent paper of Dr Williams (*Obst. Trans.*, vol. xxiv.), it becomes manifest that the most discordant views exist among the very highest authorities, and on almost every point. To discuss these opinions, or to pit authority against authority, is foreign, nay antagonistic, to my proposed objects. I cannot but think that many of the discrepancies are more verbal than real, and that some are even the result of the temper rather than of the judgment of the speakers. Two courses are open, either to follow the teaching of some one authority, or, regardless of criticism, to express merely the views which have commended themselves to myself. The latter plan seems to be the least objectionable.

Slight dysmenorrhœa may be said to be almost a normal condition, dependent on the vascular and nervous disturbances accompanying the regular function. An abnormal amount of this is often accompanied by long continuance, by scantiness, or by over-abundance of the discharge, or by alterations in its character. None of these are essential to painful menstruation, though they may often afford a clue to its

source. In many, perhaps most cases, dysmenorrhœal pain is clearly uterine, extending like the pain of labour to the back, or loins, or hypogastrium; in others it is chiefly or entirely felt in the vicinity of the ovaries, and is accompanied by tenderness on pressure there. Some disputants say that this latter is merely ovarian pain accompanying menstruation, and not dysmenorrhœa,—a distinction whose only difference seems to consist in its opposition to the classification of other disputants. Dysmenorrhœal pain is sometimes spasmodic, intermitting, and expulsive, like the pain of an abortion; more often it is continuous. Often it precedes the discharge for a few hours, or a day or two, and ceases on its full establishment; less often it continues or comes on during the discharge. Sometimes there is accompanying menorrhagia, with or without clots; at other times the discharge is scanty throughout the period. In some cases (a distinct group) the pain culminates up to, and is evidently due to, the expulsion of the whole or portions of the mucous lining of the uterus. All these varieties in pain may be traced, theoretically at least, and often practically, to varieties in the causation of dysmenorrhœa. Priestley was the first to point out a remarkable class of cases where dysmenorrhœal pain occurs, not only at the period, but also exactly midway between two periods. A physiological factor not yet explained, but which may have a pregnant meaning, is doubtless involved. The severity of the pain is in some cases intolerable, giving rise for hours or days to intense agony and depression of mind, and accompanied by sympathetic vomiting, semi-consciousness, or epileptiform attacks. I have never seen a case of death ensuing, but sometimes I have gravely apprehended it.

Causes. It will be found convenient to divide and subdivide the causes of dysmenorrhœa, including in the catalogue some which may be open to discussion. We will notice—

(A.) Causes which are of a general rather than a local character.

1. The neuralgic habit or neurotic constitution.
2. The gouty and rheumatic diathesis.
3. Mental depression, sudden or continued.
4. The syphilitic cachexia.

(B.) Causes due to, or producing, local congestions or inflammation.

1. Chronic metritis.
2. Abdominal or visceral congestions.
3. Pelvic congestions and chronic inflammatory affections.
4. Uterine tumours.
5. Uterine displacements or flexions.
6. Sudden or severe cold.

(C.) Causes due to obstruction in the passages.

1. Atresia of the cervix uteri, vagina, or vulva, or imperforate hymen.

2. Stenosis of the same parts of the genital tract.
3. Infantile uterus.
4. Uterine flexions.
5. Polypi, or tumours of the uterus or cervix uteri.
6. Pelvic exudations or adhesions, distorting or pressing on the uterus.

(D.) Membranous, decidual, or hæmorrhagic substances, whose expulsion is causative.

1. Uterine exfoliation.
2. Early abortions.
3. Diphtheria.
4. Clots from any source of stagnation or obstruction.

(E.) Ovarian or Fallopian causes.

1. Ovarian hyperæsthesia or inflammation.
2. Ovarian tumours, adhesions, or displacements.
3. Fallopian constrictions, adhesions, or inflammations.

In most of the above cases we have uterine spasm, playing, no doubt, an important rôle in the production of pain, generally caused by the effort to overcome obstruction or expel abnormal discharges, but sometimes independent of either. It is not confined to one class of cases, and cannot well constitute a class of itself. Formidable as is the list of causes now assigned, I believe it is still incomplete, and that dysmenorrhœa can, as little as the other menstrual deviations, be studied apart from its aspect of a mere symptom of something behind, either constitutional or local.

(A.) **The General or Constitutional Causes** have of late been too little recognised. Careful investigations by Hermann, Vedeier, and others have shown that at any rate many of the uterine local affections named above may be present without dysmenorrhœa, and that dysmenorrhœa may very frequently exist in their absence. This should lead us to beware of attaching too much importance to mere mechanical explanations; but, even in the estimation of these writers themselves, it should by no means lead to equally irrational ignoring of them (*see* discussion on this subject between Dr Graily Hewitt and Dr Hermann, in the *Lancet* from June 7, 1884, to February 14, 1885, and apparently not yet concluded).

The term "neuralgic habit" or "neurotic constitution" may not be a very scientific one, but I know of no better to express what has a clinical existence. Whether as a product of chloro-anæmia or of luxurious habits, or of unknown factors, the neuralgic and hyperæsthetic habit undoubtedly exists; and, apart from observed facts, all presumption would lie in favour of the uterus or its annexes being frequently affected. Why should a highly neurotic patient never have neuralgia

in the organs liable, above all others, to constant changes in all their tissues? Why should this not be specially induced at the time when such changes are most in action? And why should neuralgia, an affection, one of whose characteristics is a strong tendency to periodicity, not affect those organs which are so essentially periodic in their function? The *onus probandi* lies with those who deny the probability or actual occurrence of purely neuralgic dysmenorrhœa. The pain in this form is more or less continuous, or at any rate not necessarily synchronous with any stage of the flow. It may exist previously or subsequently to the discharge, or be coexistent with it, and in some cases will yield like magic to anti-neuralgic remedies. In the purely neuralgic form there are no inflammatory symptoms, and no clots or membranous discharge. Neuralgia is frequent in other organs, especially the breasts.

Gout and other diathetic affections must rank as causes of neuralgic dysmenorrhœa until their connection with neuralgia is disproved in other departments of medicine.

The same may be said of mental disturbance, and also of cold, though we may fairly admit that these, especially the latter, more often act through the medium of hyperæmia or local congestion.

I have so frequently seen dysmenorrhœa associated with the syphilitic cachexia, that I have placed it in this class of general rather than local causes, although I am not prepared to maintain that local tissue-changes, undetectable clinically, might not be found by the pathologist in all such cases.

(B.) **Congestion or Inflammation.**—Pain is a general characteristic of congestion or inflammation in almost every organ, and especially when that organ is functionally active. The uterus is no exception. No one, I think, disputes this source of dysmenorrhœa. If the cause be sudden and acute, the resulting dysmenorrhœa will also be so; but it may bring about a habitual recurrence, either with or without the persistence of chronic inflammation.

Chronic uterine inflammation, especially endometritis, fulfils all the conditions of a dysmenorrhœal as well as of a menorrhagic cause, although the patulous cervix may often diminish or even annul the tendency to dysmenorrhœa. Painful menstruation may also be, in some cases, lessened by the free menorrhagic discharge, while in other cases it is aggravated by the retention of menorrhagic clots.

Abdominal, especially hepatic disease, has already been mentioned as a cause of menorrhagia, and one link in that causation is passive congestion of the whole pelvic contents. Uterine tumours have a similar tendency, and are thus sometimes productive of dysmenorrhœa, apart from their obstructive action within the uterus. We shall have more to say just now on the question of uterine flexions.

Sudden or severe cold may produce dysmenorrhœa as suddenly as it produces suppression; the two things are often simultaneous, and the local congestion thus induced may often continue for an indefinite period, if the continuance of dysmenorrhœa may be considered as evidence of this.

Plethora is such an undefinable condition, that I prefer not to discuss its action, further than to state that plethoric women often suffer from dysmenorrhœa, which diminishes or disappears when the plethoric condition is reduced.

(C.) **Obstruction.**—Complete closure of the cervix uteri, vagina, or other parts of the genital canal, whether congenital or acquired, is, of course, a cause of painful attempts at menstruation. No one denies this. Probably every one will also admit that in such cases the pain is due to the uterine muscular efforts to overcome an absolute obstruction. No one would surely refuse to admit, however, that here the case may more fairly be considered as one of obstruction, than as one of muscular spasm, which is only secondary.

In stenosis, however, there is an orifice of outlet, though this is at some points abnormally small. A too minute orifice in the hymen has been noticed as a cause of dysmenorrhœa, which was cured immediately by incision (Watts, *Am. Jour. of Obst.*, 1882, p. 269). This is a rare occurrence, however, and may be variously explained. I am not aware that dysmenorrhœa from vaginal stenosis, apart from other presumptive causes, has been recorded; but, if uterine stenosis be admitted as a cause, one could hardly dispute the possibility of vaginal. It is chiefly with contracted cervix, however, that we have to do, though there are many who will not admit that this is ever a cause of dysmenorrhœa. *A priori* one might expect that the passage of a given amount of fluid through a contracted passage might produce distention of the contracted portion and consequent resistance and pain, even if the fluid did not become inspissated during the temporary retardation of its flow. Dr Matthews Duncan, and my colleague Professor A. Gamgee, showed by experiment, some years ago (*Jour. of Anat. and Phys.*, Nov. 1870), that blood will flow through a glass capillary tube. Capillary glass tubes, however, cannot evidence pain. Many cases have also been clinically noted where a painless menstrual flow occurred through an exceedingly contracted os uteri. I have seen this myself. From this fact, the deduction is made by many eminent gynecologists that obstructive dysmenorrhœa is a myth. On the other hand, it is impossible that any one familiar with female diseases can have failed to recognise many cases where stenosis of the cervix uteri, or partial blocking of its passage by tumours, or by flexion of its walls, was regularly accompanied by severe dysmenorrhœa, and where the pain disappeared immediately on the removal of these conditions. Obstructive dysmenorrhœa

seems to me to be a clinical fact, explain its occasional absence under very similar circumstances how we may. In one case it may be the resistance of a sensitive and contracting canal, in another the additional expulsive effort required, and in another the inspissated, because retarded, flow, which is the main factor in the production of pain; in all it is the obstruction which is primarily at fault. Stenosis of the cervix and infantile uterus are more fully discussed in the next chapter, together with their treatment.

Uterine growths act not only by causing hyperæmia of the organ itself and of the surrounding pelvic tissues, but also by blocking the cervical canal, and pelvic disease may also act as a cause of dysmenorrhœa in this twofold manner.

The question of uterine flexion as a cause of dysmenorrhœa is a very knotty one, if we are to judge by the extent of its literature. A flexed uterus is apt to become an engorged one. The bending of its walls interferes with the circulation, and both fundus and cervix are apt to become swollen thereby. It is very common to observe distinct and chronic engorgement of that portion of the cervix which lies towards the concavity of the flexion. If the bend occur in the cervix itself, there is contraction of the canal at that point, and the removal of this by the sound does undoubtedly often afford temporary and sometimes permanent relief, *experto crede*. The retardation of the flow thus caused tends to cause intra-uterine coagulation, hence an aggravation of the pain. The passage of small clots thus induced has been watched through the speculum, and its accompanying accession of pain has been demonstrated. To say that, because sometimes pain does not coexist with the passage of fluid through a contracted cervix or flexed uterine canal, therefore it is never so produced, would be to pursue a line of argument which would upset many other true deductions from the phenomena observed in the living subject. Bernutz has observed large uterine casts passing without pain, but this does not militate against the certain knowledge we possess as to

(D.) **Membranous, Decidual, or Hæmorrhagic Causation.** On the contrary, we are here on comparatively safe and indisputable ground. No one doubts that the expulsion of a firm clot of blood, or of an early abortion, or of a more or less complete exfoliation of the uterine mucous lining — of the unimpregnated and undisintegrated decidua — gives rise, as a rule, to pain, and no one is, apparently, very much inclined to analyse the relative share in the production of this pain borne by uterine spasm or cervical resistance to dilatation.

I have no experience of that rare affection, true uterine diphtheria, but of early abortion every practitioner has some. Clotted menstrual discharge is nearly always accompanied by pain, unless the clots are of

extra-uterine origin, or unless, as in many cases of chronic metritis, we have also a very patent cervical canal.

The not very common affection of the periodical discharge of a complete uterine cast (*membranous dysmenorrhœa* of most writers) demands a few further remarks. According to the views of menstruation enunciated by Williams and others, the whole, or a large amount of the mucous lining of the body of the uterus is cast off at every period. In health this is accompanied by fine disintegration, giving rise to no pain or visible phenomena. Under certain as yet obscure conditions, however, disintegration of the mucous coat does not take place, though expulsion does. It is expelled as a more or less complete cast, of triangular shape (fig. 93), showing, when perfect, the orifices of the os externum and Fallopian tubes. Its internal surface is



FIG. 93.—Dysmenorrhœal Membrane (Coste).

smooth and pierced with the openings of the uterine glands, its external surface, when floated in water, is shaggy and villous. Why this occurs in only a small percentage of women, and not in others, is an open question. Inflammation has probably nothing to do with it, and certainly conception has not. We may hide our ignorance by saying it is due to malnutri-

tion. However that may be, we may have a cast, often a very perfect one, thrown off and expelled by uterine contraction, and by the blood which accumulates behind it, at every period. Once established, the habit of exfoliation *en masse* is apt to continue for years, or during the whole of sexual life, giving rise to successive attacks of dysmenorrhœa, which generally increase in severity and baffle the skill of the ablest practitioners.

In all the cases of dysmenorrhœa referred to under this section, the pain usually ceases when the offending body is expelled. It should be mentioned here, moreover, that occasionally, though rarely, a substance may be expelled which bears the shape of the uterus, and resembles pretty closely an early abortion. On minute examination, however, it is

found to contain no trace of decidual structure, nothing but more or less decolorised fibrin. It may even have a hollow interior. The utmost caution is necessary, for obvious reasons, to bear in mind the possibility of such a fibrinous polypus, as it is sometimes termed, independently of impregnation or sexual congress, otherwise a diagnosis disastrous to the reputation of patient or doctor may ensue.¹

(E.) **Ovarian or Fallopian Causation.** Some authors would eliminate the ovary as a cause of dysmenorrhœa, but misunderstanding on this point would appear to be rather as to nomenclature than otherwise. Matthews Duncan says (*Clinical Lectures*, 2nd ed., p. 129). "In the same way she is said to have ovarian dysmenorrhœa if she has pain in one or other ovary during the monthly period. But this is not dysmenorrhœa proper." But, proper or not proper, it is so frequent a form, and the functions of the ovary and the uterus are so allied, that it seems advisable to retain it in any attempted classification. Others have objected to the term because it seems to sanction the theory of a regulating ovarian force in menstruation, beyond what is capable of proof. All that is asserted, however, is the clinical fact that many women suffer from acute or sub-acute pain in the ovary at every menstrual period, and very frequently at that period only. This usually precedes the flow, occurring at the time when the vascular and nervous tension are rising to their acme. Under such circumstances the ovary is frequently the subject of some abnormal condition—chronic inflammation, cystic degeneration, prolapse, &c., which can be ascertained by bi-manual examination, but in other cases the dysmenorrhœal pain is the only ascertainable fact. The pain may radiate into the abdomen or lower limbs, and there often accompanies it a marked tendency to hysteria and other neurotic affections. True epilepsy, or the train of symptoms described of late years as hysterio-epilepsy, are also met with.

The whole subject of the part played in menstruation by the Fallopian tubes is at the present time *sub judice*. That they do play a more important part than was formerly supposed, may certainly be taken as proved, but how far that part is primary, and how far secondary, to uterine or ovarian stimulation is quite uncertain. They do become intensely engorged, and they are subject to disorders which must often render such engorgement unusually painful, and they are thus probably to be credited with some of the extra-uterine phenomena under consideration.

¹ See papers by Haddon, *Edin. Med. Jour.*, Jan. 1872, p. 611; Cullingworth, *Obstet. Jour.*, vol. vii., 1879, p. 438; Duncan, *Obstet. Jour.*, vol. viii., 1880, p. 129; and Ræ, *Lancet*, vol. i., 1881, p. 314.

Treatment of Dysmenorrhœa.

We have next to consider the bearing of the above complex but necessary classification on the subject of treatment. Whether the disordered function exists from the commencement of menstruation and lasts indefinitely, or whether it arises at some subsequent period, and is temporary in its duration, the true principle of treatment must always be to regard it as a symptom of some one, or of a combination of more than one, of the constitutional states or local affections above mentioned. I would rather omit all mention of the treatment of so painful and common an affection, than mislead the student by drawing off his attention from the necessity of always endeavouring to understand the causation and the rational treatment which depends thereon. The general bodily conditions demand special study, and particularly in primary dysmenorrhœa, in young subjects, at a time when we are apt to be dazzled by so many recent surgical triumphs. I need not further refer to the measures required by the neurotic constitution or neuralgic habit, by gout, rheumatism, or syphilis, or by abdominal or thoracic diseases leading to congestion of the pelvis. They should be fully tested before having recourse to manipulations which we would fain avoid. Even when palliation or empirical treatment is absolutely called for, it should be only an incentive to the further search for causation, and for treatment founded on a surer basis. The treatment of chronic metritis, of infantile uterus, of uterine displacements, of uterine polypi and tumours, and of stenosis and atresia of the genital organs, is discussed elsewhere, as also that of those pelvic affections which, in various ways, carry painful menstruation in their train.

Membranous dysmenorrhœa might be considered as a disease *per se*, although, unfortunately, its treatment is almost as obscure as its pathology. Fruitless attempts have been made by means of alterative medicines—iodine, arsenic, mercury, guaiacum, cod-liver oil, and the like—to change the nutritive conditions which are supposed to involve the expulsion *en masse* instead of the disintegration of the uterine mucous membrane. All sorts of powerful local remedies—nitrate of silver, nitric acid, bromine, and so forth—have been applied to the interior of the uterus, in the hope that they would in some way modify its tissue changes. I have never seen any satisfactory proof of success in either way, though so eminent an authority as Dewees speaks very certainly as to the favourable action of guaiacum, and all that I have to recommend in this affection is to adopt general means, just about to be mentioned, for relieving present pain, and for giving a free egress for the uterine cast, by means of dilatation of the cervix.

For the relief of the main symptom, dysmenorrhœal pain, we have an abundance of remedies, more or less effectual.

1. *Opium* in its various forms is perhaps the most effective. It must be used sometimes, but should always be prescribed in disguise. The terrible opium habit is a wretched substitute for any painful affection, even where the symptom of pain is constant, and the disease is necessarily fatal.

2. *Alcohol* is perhaps the most popular remedy, and its use in dysmenorrhœa, and in alleviating the nervous depression of pregnancy, is an almost certain means, in neurotic subjects, of creating habitual female drunkards. I can trace scores of cases, from my own knowledge, to this source alone. To be of service it must be given in sedative, that is in large and increasing doses, and for several years I have forbidden its use under these circumstances, in large or in small quantities, in disguised or undisguised forms.

3. *Certain other Sedative or Antispasmodic Remedies* are occasionally of use, but the action of every one of them is liable to be uncertain. Henbane and conium are of this class. *Cannabis Indica* has a more extended reputation, and not quite undeservedly. In doses of 15 minims of the tincture, or 1 grain of the extract, or 4 or 5 gra. of the tannate, it frequently produces in a very short time a marked amelioration of the pain, even in obstructive cases, but I fear the preparations are apt to vary much in strength or purity. Chloral, as in other cases of severe pain, succeeds best when exhibited with a more distinct anodyne. The bromides, given freely for some days previous to the period, serve to mitigate the neuralgic or ovarian types. Valerian, camphor, sumbul, &c., have all their advocates, and a pearl of opiol at night seems to afford some relief in slight cases. I have seen also much relief, lasting for some hours, from the inhalation of 3 or 4 minims of nitrite of amyl.

4. *Aperients*.—A good smart aperient, just previous to the period, will, more often than might be supposed, produce complete exemption from pain, in moderately severe cases of the congestive type.

5. *Rest* during the period, and for a day or two previous, is of undoubted service. Nature herself points this out to those who will attend to her suggestions. Special postures, as on the back, abdomen, or side, may be indicated by our views of the causation, but still more often by the experience of the patient herself, directed or elicited by the physician.

6. *Hot Water*, in various ways of application, is one of our most valuable resources, and is unaccompanied by any danger except that of scalding the patient. Hot pediluvia or hip baths will relieve many, chiefly in the congestive forms. Hot-water bags applied to the spine will relieve others, chiefly where there is much apparent spasm or colic :

and hot-water injections into the vagina, after Emmet's method, have several times afforded very great relief, in my hands.

How, next, can we surgically promote the free flow of the menstrual products in a dysmenorrhœal patient, or do away with the function altogether? and under what circumstances are these safe or advisable proceedings? There are at least four available methods of local treatment:—

1. Local depletion. 2. Dilatation of the cervix. 3. Enlargement or alteration of its form by incisions. 4. Excision of the ovaries and Fallopian tubes. These methods differ widely, of course, in their relative importance and gravity, and in their action as mere palliatives or as radical cures.

1. *Local Blood-letting*, previous to or during the attack, will sometimes afford relief, during that period at any rate, and may therefore sometimes be employed. The congestive forms, or those due to obstruction by uterine tumours, are the most likely to be benefited in this way, and the remedy must not be used indiscriminately. Leeching is a cumbersome method of attaining the result, and scarification (see p. 78) is preferable. No one would, I hope, dream of employing the scarificator as a habitual antecedent to menstruation in its chronic dysmenorrhœal form; but in special exacerbations, or when the pain is due to acute and temporary congestion, it is a valuable means of relieving pain.

2. *Dilatation of the cervix* ranks as a method both of temporary relief and of permanent cure, and may not infrequently be required as a means of diagnosis, and this seems to be a fitting place to mention the various methods which are adopted for the purpose. We can thus indicate the relative value of each for our present purpose, and we may save repetition in the future.

(a) *Uterine tents*, of sponge, laminaria, and tupelo, have already been described (p. 28), and their mode of introduction, diagnostic uses, and dangers need not again be referred to. Their action is comparatively slow, and they tend occasionally to increase already existing congestion of the uterus. They are more apt also to be followed by inflammatory accidents during or near to the menstrual period than at other times. Their prolonged retention adds to the general irritability and explosibility of the nervous system, and they introduce the element of obstruction, with consequent opposing spasm, when that element is otherwise absent. As diagnostic aids, their value, between the periods, is sometimes great. When intra-uterine growths are suspected, indeed in most cases where dysmenorrhœa or metrorrhagia are accompanied by enlarged uterus, their employment becomes a necessity, for the purpose of ascertaining the real pathological state involved. Used in this way, they may prove curative. An obstructive growth in the cervix, or intra-cervical granulations from old metritis, will sometimes yield at once to

the absorbent processes set up by the pressure of a tent. In cervical stenosis also, whether original or acquired, a fine laminaria tent is often the most effective means of commencing the process of dilatation, which may be completed by the sound or other dilators, or by incision. As an immediate method, to set free—say, a dysmenorrhœal membrane, other dilators are preferable.

(b) *The Sound and its Modifications.* The introduction of an ordinary uterine sound, when that is possible, just previous to menstruation, will occasionally bring about complete absence of pain at the ensuing period, and, however we may explain it, this happens chiefly in those cases accompanied by uterine flexion, especially antelexion. It may, and often does, fail, but is not to be neglected as an occasionally useful resource. When used in this way, resistance may be met with either at the os externum or os internum, and it is frequently necessary to tire that of the latter by keeping the point steadily held against it, without actually pushing forwards. By this means alone, used once only before two or three successive periods, I have cured at least a dozen obstinate cases of dysmenorrhœa, probably when the obstruction was mainly or wholly spasmodic, or—dare I say so?—when it was due to antelexion. But the sound, or its modifications, is useful in other ways, although one eminent gynecologist (Tait) says of it that “probably we should have lost nothing if it had never been invented.” By using various sizes it may be made the means of either tolerably rapid dilatation shortly before menstruation, or of more gradual dilatation of a more permanent character. Matthews Duncan, and following him Godson (*Obst. Trans.*, vol. xxiii. p. 277), though they are unwilling to admit the existence of obstructive dysmenorrhœa, have strongly inculcated, and successfully practised, a proceeding which is highly acceptable to those who do. It is not necessary to have separate instruments for the purpose. When an ordinary uterine sound can be passed, the male urethral bougie, with moderately short curve, like that of Brodie's or Lister's catheters, will serve the purpose for further dilatation. A very slight nick at 2½ inches from their extremity, on the convex side, does not impair their use as bougies, and serves to indicate how far they have been introduced into the uterus. When the object is to procure relief by giving free exit to a dysmenorrhœal cast, it is allowable to proceed with some rapidity. Thus, in a recent case of membranous dysmenorrhœa, I introduced an ordinary sound, followed by a No. 6 bougie, on the morning of the second day before the expected flow, and in the evening I passed Nos. 7 and 8 without pain or difficulty. Next day I passed Nos. 9 and 10 in the morning, and Nos. 11 and 12 in the evening, retaining each for about a minute. Menstruation supervened in forty-eight hours afterwards with very slight pain, the cast appearing as usual. At the next



FIG 94 - Priestley's
Uterine Dilator.

period I passed Nos. 10 and 12 easily, after the commencement of the discharge, with a similarly favourable result. During the next two periods there was no cast and very little pain, but I have lost sight of the patient, owing to her leaving Manchester at that time. This practice, when available, is free from many of the disadvantages of dilatation by tent, but it must not be supposed that such rapid dilatation is often possible in this way without much pain and some risk. When, in such a case, the resistance, and consequent pain, are greater, one must either be content with a modified result, commencing much earlier before the next period, or one must have recourse to some of the other methods of rapid dilatation. For the more permanent cure of obstructive dysmenorrhœa the dilatation must be conducted during the intervals, allowing at least two days to intervene between successive attempts. I have never felt justified in producing the amount of pain which is admitted as almost a necessity by Duncan. If there is any very decided pain at all I withdraw the instrument at once, and do no more at that sitting; if the introduction of one number is nearly painless, I keep it in for a minute or two and then pass the larger one. The progress varies very much in different cases, but is safe and almost certain. If there is the slightest rise in temperature, the treatment is intermitted and free injections of hot water are used. Acting on these cautious principles it will be necessary to admit now and again that the plan is unsuitable, and to have recourse to other methods. But I feel certain that, with these precautions, we are exempt from the great dangers which Sims and others have attributed to this plan. I can as confidently recommend it in suitable cases as I would deprecate its use in cases attended by much local congestion, by sub-acute uterine or pelvic inflammation, or by manifest ovarian tenderness. In cases also where the uterus is undeveloped, dilatation in this way must be very slow and gradual, and we must be prepared to readily acknowledge failure, for the time being. A return to it some months later has in my hands proved most successful in two such cases—comparatively free menstruation following, and being followed by pregnancy.

I may, however, state here, by the way, that though sterility usually, or very often, accompanies chronic dysmenorrhœa, it has been thought advisable to speak of it and its treatment separately elsewhere (Chap. XX.).

(c) *Other Dilators.*—Many instruments have been devised for the purpose of more or less forcibly and rapidly dilating the cervix uteri. Priestley's (fig. 94) is one of the simplest and safest of these. It con-



FIG. 95.—Sims's Uterine Dilator.

sists of a sound split through a portion of its length, which split portion is capable of being opened by screw movement to a given extent, which is registered at the screw. When time is a great object, it may be used to expedite or replace dilatation by bougies, but when time permits I prefer the latter. Its use is more painful than that of the sound or bougie, used as above recommended, though with care and patience it may be made to resemble it very closely in action. Other much more complicated expanding dilators have been introduced by Marion Sims, Atlee, Ellinger, Schultze, and others, which have two or more branches, that open with a certain amount of parallelism. Sims's instrument (fig. 95) may suffice to show one of these. Writing as I do mainly for non-specialists, I hesitate, however, to recommend costly and complicated instruments, which require much tact in their management, and whose superiority in actual practice is by no means certain.

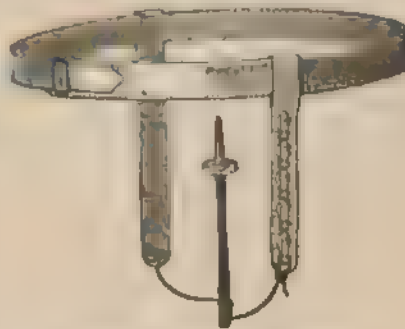


FIG. 96.—Tait's Uterine Dilator.

Dilatation may also be made by hard rubber cones, somewhat similar to those of Simon for the urethra. Mr Lawson Tait introduces these, and holds them *in situ* by a solid stem (fig. 96), and this, again, is attached to the waist by elastic cords, so that pressure is constant and uniform. When dilatation is required for diagnostic purposes, it may thus be induced with considerable rapidity, but the size of the smallest

cone is such as to forbid their use in most cases of dysmenorrhœa, except as a means of providing escape for a membranous cast, and here I would rather use them by manual pressure, and with anæsthesia.

3. *Incision of the Cervix.*—This plan of treating dysmenorrhœa and sterility was mainly brought into notice by Sir J. Y. Simpson, who introduced a special instrument, the hysterotome (fig. 97), for the purpose. Unfortunately, the operation was comparatively easy, and the occasional results were so striking that it was greatly abused; and one does not require to be very aged to remember the time when slitting the cervix uteri threatened to become as universal a practice as was causticizing uterine ulcers, or as stitching up the slit cervix now threatens to be in some quarters. The much greater difficulty of the last-named process will, however, probably serve as a check. Slitting up the cervix uteri is performed for two distinct objects, which should be clearly kept apart, though the means employed in each case are much the same. The one object is simply to enlarge the cervical canal, especially its external orifice; with this we have to do here. The other is to alter the axis of the cervical canal, in relation to the canal of the

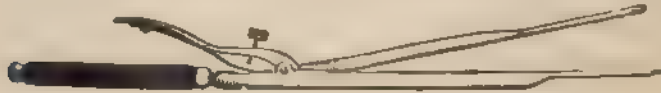


FIG. 97.—Sir J. Y. Simpson's Hysterotome.

body of the uterus, by slitting the former backwards in certain cases of ante flexion of the uterus, whether this ante flexion is a cause of dysmenorrhœa or not, but in relation to existing sterility. Simpson's hysterotome was a *bistouri caché*, fine enough to be introduced into an undersized cervix, and capable of being extruded from its sheath by the spring handle, to any extent, previously determined by a screw. It was passed into the cervix till it nearly reached the os internum, turned with its cutting edge to one side, and withdrawn, while firm pressure was made on the handles during extraction. There ensued a lateral incision, small at first, but cutting right through into the vagina at the os externum. The same process was repeated on the opposite side. Several ingenious instruments have since been invented by leading gynecologists, which provide for the making of both incisions at once, and of an equal depth. I need not describe these, because I believe that one incision directly backwards will serve all the purpose of the double lateral cuts, while it is less likely to cause severe hæmorrhage, or pelvic cellulitis, or undue gaping (ectropion) of the enlarged os externum. The invention of new hysterotomes seems to be getting out of date.

The incision may also be made by a sharp probe-pointed bistoury, or

by Emmet's movable knives (fig. 46) used with the duck-bill speculum, or by scissors adapted for the purpose (fig. 98). The latter plan shows most clearly the amount of incision made, the point at which the hooked external blade grasps the cervix externally being clear to the eye. Whichever plan is used, it is always most satisfactorily carried out with the cervix well exposed to view, and steadied with a hooklet. Unless the largest tubular speculum, or a good expanding one, such as Reid's, can be used easily, the duck-bill is required, so that it may be absolutely seen that the incision does not extend higher externally than the point of reflexion of the vagina from the cervix. The hemorrhage which follows such a single backwards incision is seldom great, often angularly slight, and can be arrested by a temporary tampon soaked in iodised glycerine, perchloride of iron, or other hemostatic, and pressed firmly against the part, but occasionally, and still more if the lateral incisions have been made, it may be considerable, and has proved fatal. If there

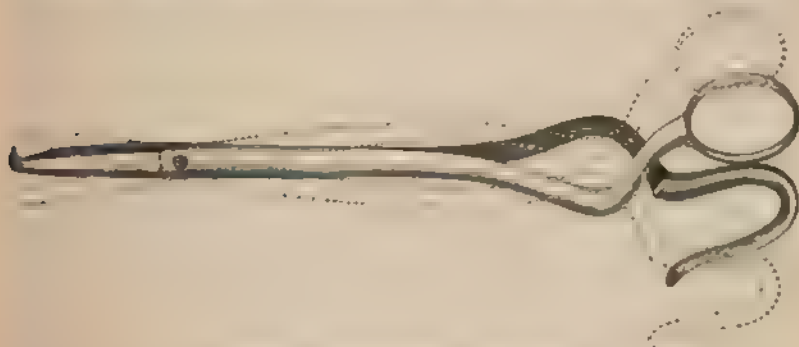


FIG. 98.—Kuchenmeister's Uterine Scissors.

is any doubt, the vagina must be plugged before the speculum is removed (p. 83). The operation is never in any form absolutely free from danger of septic or inflammatory mischief, and the patient should be operated on at home, and carefully tended in bed for at least ten days, with daily or more frequent antiseptic vaginal injections. To prevent adhesion of the cut surface, the tip of the finger, well carbolicised and lubricated, should be passed as far as possible into the wound, every second day for a week or more, and a sound should be passed into the uterus once or twice previous to the next period.

What are the comparative merits of dilatation or incision? I refer, of course, only to their bearing on cervical narrowing with dysmenorrhœa. Dilatation I believe to be safer, if conducted with the precautions mentioned above. Only in comparatively rare cases, and to the skilful specialist, would I recommend incision of the *canal internum*. I would therefore advise the use of dilatation first, in most cases where

one of the two courses is indicated. But dilatation is in some cases more painful, more tedious, and more liable to failure by relapse. When therefore dilatation by sound is unusually painful or difficult, when the effect of one sitting is more than once not apparent at the next, or when the relief obtained by dilatation at one menstrual period is totally lost at the next, I would recommend that incision should be used. The circumstances of patients, especially those in hospitals, must always form an element in such calculations; a patient with abundant leisure and a comfortable home may often, regret it as we may, be treated in a different manner from one who must choose between a flying visit to a dispensary in the midst of work, or a stay of two or three weeks in the wards. The physician must weigh these points, the patient cannot.

However the cervix may have been mechanically enlarged, it should occasionally be explored with a full-sized bougie for some months, or, if the uterus is evidently not very irritable, a glass intra-uterine pessary (fig. 99) may be worn in the interval between the periods.



FIG. 99.—Glass Intra-Uterine Stem Pessary.

It is very difficult to convey to the reader the frequency or infrequency with which such processes are required. The student is too apt to leave college with the idea that ovariectomy, amputation at the hip joint, removal of the tongue or larynx, and the like operations will frequently come across his path to do or to recommend, though he speedily undergoes disillusion. To such I would say, dysmenorrhœa is a symptom, a very common symptom, of constitutional states or common female affections. Constriction of

the cervix is only one among many, but it is one; you must therefore avoid the common error of considering it as almost the sole cause, and you must equally be prepared to treat it surgically when you can clearly diagnose its existence.

4. *Removal of the Ovaries and Fallopian Tubes.*—Removal of the ovaries, with or without the Fallopian tubes, is now freely recommended for certain forms of dysmenorrhœa, since Battey brought the operation into prominent notice in 1872. The consideration of oophorectomy, normal ovariectomy, spaying, or whatever the disputants may finally choose to term it, will be best undertaken when the ovary itself is under consideration. Here I need only say that the result of the cases I have seen, or of the many of which I have heard and read, has been to convince me that, for nervous affections, hysteria, epilepsy, hysterio-epilepsy, &c., supposed to depend on ovarian or menstrual derangement, it is at best a very doubtful remedy and one involv-

ing a grave responsibility which I should rarely be prepared to undertake. On the other hand, in the presence of continued dysmenorrhœal pain, with undeveloped sexual organs, or with distinct evidence of ovarian or Fallopian induration, enlargements, or displacements, which had resisted the known methods of treatment, I dare not refuse to a woman the relief from suffering which is clearly held out by many successful cases of removal of the uterine appendages under these circumstances.

The treatment of metrorrhagia as a symptom of certain local uterine organic diseases, and apart from any special relation to menstruation, will be further referred to under the headings of Uterine Tumours, Cancer, &c.

Vicarious Menstruation.

Instances of complete vicarious menstruation—that is, of continuously periodic discharges of blood from other parts of the body than the uterus, and entirely replacing the normal discharge—are very rare, mere *lusus naturæ*. Yet they have been sufficiently often recorded to show that nature does thus sometimes relieve its periodic vascular tension through other channels, chiefly through mucous surfaces. Less clearly marked cases of hæmoptysis, hæmatemesia, epistaxis, and the like, independent of ascertainable disease of the organs from which they proceed, and accompanying scanty or absent menstruation, are not uncommon. The difficulty lies in determining when such hæmorrhages are in any sense vicarious, and when not. In spite of the known general systemic tension at the menstrual periods, it is difficult to avoid the suspicion that there must be some local weakness which determines the source of hæmorrhage. A sound practical rule is, that whenever a case of supposed vicarious menstruation has been met with, it is wise not to lose sight of the organ from which it proceeded for a considerable time. In the temporary absence of physical signs of disease of that organ the most skilful practitioner may be misled, without this precaution. When menstruation in the natural way can be safely promoted, it forms the proper treatment of such a case, and I am not aware that anything more can be said on the matter.

After having taken so much pains to impress upon the student the necessity of regarding menstrual disorders as merely symptomatic, I should perhaps apologise for devoting so much relative space to their discussion. The only excuse is this, that he who, in a large general practice, faithfully studies the causation of these symptoms, and so treats them rationally, will relieve far more human suffering than the most distinguished operator or discoverer can do, apart from his influence on the practice of others.

The literature of the physiology of menstruation is so scattered, that I cannot refer the English student to any better introduction to it than Williams's paper in the *Obstetrical Journal*, vol. ii. Its disorders are also discussed in every text-book, but can only be fully studied by one who will take the trouble to consult the various medical periodicals of the last decade.

The Menopause.

Towards the close of menstrual life—the menopause—the female system becomes liable, as at its commencement, to many functional disorders; and, as this is also the most frequent period of origin of many organic diseases, especially of cancer, it is very important that they should be known and recognised. Cessation may be sudden or gradual, or with several intermittent threatenings. It may be absolutely without general symptoms, or it may give rise to many. The key to most of them lies in abnormal disturbances of circulation and innervation. Painful and otherwise causeless flushings of the head and face, often accompanied by headache, giddiness, or disorders of the special senses, are most frequent. Attacks of menorrhagia often occur, but nothing can be more dangerous to the patient or to the reputation of the practitioner than to adopt without examination the popular formula of “change of life” as their cause. I am afraid to guess how many cases of polypus I have seen allowed to bleed the patient almost to death from such inadvertence. Every form of neuræthema, neuralgia, hysteria, convulsive disease, melancholia, or other mental affections, is rife at this time. Dyspepsia is constantly met with in its protean forms. Vicarious hæmorrhage is now, if ever, a reality; and that odd mimetic affection, spurious pregnancy, has to be suspected. While there is a tendency for non-malignant growths, especially uterine fibroids, to become stationary or to be absorbed, there is an opposite tendency in all forms of malignant disease.

The woman who has arrived at this period should be as carefully guarded against noxious influences as the young adolescent girl. Her diet and regimen should be carefully attended to, the too free use of alcohol especially being forbidden. Gout, or the tendency to lithiasis, are apt to develop themselves, and must be guarded against. The bowels must be regularly attended to, and in most cases occasional free purgation is acknowledged by the patient to relieve her symptoms. The uterine hæmorrhages, so frequent in some degree, must be carefully differentiated from those of organic disease, and are best controlled by the free use of ergot. The various nervous symptoms demand careful regulation of the occupations and amusements of the sufferer, and kindly

care at this time is the surest prelude to a green, prolonged, and useful old age. Too many a woman of forty-five to fifty years of age has her future usefulness and happiness destroyed by sacrificing herself at this time to the whims and exigencies of her growing family; and society loses incalculably in all its social and philanthropic aspects when it loses the services of a hale, experienced woman, who has passed safely through the climacteric period. I have little or nothing to say in the way of drug treatment of this period, further than that the bromides as a non-narcotic sedative, aperients as a species of derivative or temporary substitute for other evacuations, and ergot as a controller of hæmorrhage, have now their special value, while the various tonics—iron, strychnia, quinine, &c.—may require to be exhibited and watched as to how far they are found to agree or disagree with the varying abnormal vascular and nervous tension.

CHAPTER VIII.

DISEASES OF THE UTERUS. Infantile Uterus. Stenosis of the Cervix Uteri. Uterine Atrophy. Inflammation of the Uterus (Metritis), including Acute and Chronic, Parenchymatous and Mucous, Corporal and Cervical, Metritis.

Infantile Uterus.

THE congenital malformations of the uterus have been already mentioned in Chapter VI, together with those forms of atresia which depend on such malformations. I stated there that, independently of any imperfect lateral closure or other malformation of the genital tract, we may have in the adult a form of uterus which, at an early period of life, would be considered as almost normally developed, but which has suffered from an arrest of growth and development, so as to render it unfit to fulfil the functions of adult sexual life. For practical reasons I



FIG. 100. Uterus Infantilis (Schroeder)

deferred the consideration of this until the present chapter, although I had occasion to refer to it when speaking of menstrual disorders. Schroeder describes both what he terms the *uterus foetalis vel infantilis* and the congenital atrophy of the uterus. In the former case the uterus is normally formed at the time of birth, but retains the infantile form in adult life. In this (fig. 100) the proportion of body and cervix are different from what we find in the normal adult, the body constituting only about a fourth or a third of the entire length, while its walls are thin and scantily endowed with muscular fibre, the cervix approaching more nearly to the adult form and size. But the whole uterus is of diminished length (say $1\frac{1}{2}$ to 2 inches), and the vaginal projection of the cervix is small compared with that in the adult. There is generally coexistent a retarded development or growth of the vagina and ovaries, and the signs of puberty are late or incomplete. The other form, that of congenital atrophy, is characterised by a much more normally proportioned uterus, but it is small in every way; the fundus and cervix participating more equally in this quality. It is, in fact, much more an example of diminished local nutrition, met with in the chlorotic, tubercular, or scrofulous,

but occasionally found in otherwise well-developed women, while the previously mentioned form is rather a freak in local development and growth. Clinically, I prefer to class both these forms together as infantile uterus,—an affection by no means uncommon, but often unrecognised as to its pathology,—though the treatment of its distressing results—amenorrhœa, dysmenorrhœa, uterine ante flexion, ovarian irritation, and a host of nervous symptoms—is often the opprobrium of gynecology. An examination, rendered necessary by any of these conditions, reveals the small nipple-like intra-vaginal cervix, which is the most characteristic feature in these cases. Along with this we nearly always find an excessive degree of ante flexion of the fundus, the small round ball of which is felt distinctly in front, while the little cervix points more or less forwards (fig. 101). If the sound can be insinuated at all, it passes to considerably less than the normal extent, and extreme caution is necessary to avoid perforation of the thin fundal wall. I am sure that in actual practice this description is more accurate than that which is gained by adhering too closely to the strictly anatomical descriptions of Schröder and others. Development and growth do take place, and somewhat modify the organ in the direction of that of the adult, with a result more or less closely corresponding to that now described.

Symptoms.—Except in those comparatively few and fortunate cases where ovarian action remains completely dormant, owing to the still more undeveloped state of the ovaries, and where the woman remains practically asexual during life, the possessor of an infantile uterus is generally the victim of endless suffering. In the less typical cases, marriage may afford relief if followed by pregnancy; but in the majority marriage is unfruitful, and the stimulus of connection only produces congestion and increased difficulty in the performance of menstruation. This function, often late in commencement, is from the beginning irregular and painful, the dysmenorrhœa increasing instead of diminishing. Fortunately menstruation often ceases early in life, but the patient is not infrequently too disabled, mentally and bodily, by previous suffering, to enjoy the respite from local pain which then ensues.

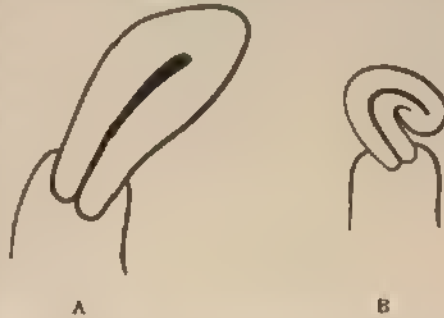


FIG. 101.—Normal (A) and Infantile (B) Uterus, as met with clinically. The proportionately long Supra-vaginal Cervix and the Ante flexion of the latter are frequently less pronounced.

The diagnosis of the condition is all-important. For want of it many unfortunate women are constantly condemned to suffer from fruitless attempts at curing individual symptoms, without regard to the condition as a whole; yet diagnosis is by no means difficult. The amenorrhœa or scanty menstruation, and, above all, the dysmenorrhœa, which are the most marked symptoms, lead to investigation. The small nipple-like cervix sets us at once on the track. Bi-manual examination reveals the small, and far more than normally anteфлекed, fundus, and the sound reveals either an almost impassable canal, or a uterus decidedly shorter than the normal $2\frac{1}{2}$ inches. Every one of these conditions must, however, be made out, for I have not unfrequently found the small nipple-like cervix and some decided anteфlexion combined with normal length and development of the uterus otherwise,—a condition of matters much more amenable to treatment, and likely to improve in course of time.

Treatment.—What can be done for such cases in the way of treatment? When menstruation, and consequently dysmenorrhœa, are absent, the most masterly inactivity is the wisest course to pursue. Never mind an anteфlexed uterus or a contracted os under such circumstances. You may, by diligent irritation of the organs, induce attempts at menstruation, and the patient will have many years' suffering in consequence. But when futile or painful attempts at menstruation are already present, and increasing in severity, something must, if possible, be done. If a moderate-sized sound can be introduced, and the uterus is found to be nearly normal in length, marriage, if contemplated, may be permitted or even advised. But, meanwhile, how can the narrowed cervical canal, or the uterus, feebly developed as a whole, or the concomitant ovarian tenderness, or the general sympathetic nervous states, ranging from slight hysteria to insanity or epilepsy, be best counteracted? To treat the flexion by pessaries in the vagina only is entirely useless. To drug the patient with narcotics and stimulants, except as an occasional stop-gap, most religiously watched, is to add the miseries of drunkenness to those already existing. Some improvement occasionally follows the treatment of coexisting chlorosis, or other constitutional morbid conditions, by suitable means, but as a rule the suffering is so great as to demand local treatment. The cervical canal must be opened up by probe, tent, sound, or backward incision, as directed in the last chapter, and this alone will sometimes suffice to diminish the dysmenorrhœa, while time, or the stimulus thus given, may improve the nutrition and growth of the uterus and render the relief permanent. If the progress of events shows no tendency to uterine or pelvic inflammatory attacks, a freedom evidenced by the absence of fixed local pain or of exudation, and by steadiness of the temperature, an intra-uterine stem pessary may be introduced, partly for the purpose of

keeping the canal open, and partly to act as a gentle but constant stimulus to local growth and nutrition. Such intra-uterine stem pessaries are fully described hereafter, with their mode of introduction, and the precautions to be observed (Chapter XII.). But for this particular purpose the copper and zinc stem of Simpson (fig. 102) or of Barnes (fig. 103) is specially useful. Its slow galvanic effect meets the requirements of the case, but it must never be long enough to touch the fundus uteri, and it must be withdrawn at the menstrual period, and on the slightest evidence of local inflammation. Much has been written on the treatment of this affection, but beyond the temporary relief of dysmenorrhœal pain, the opening up of the cervix, and the stimulation and straightening of the organ by stem pessaries, used with the utmost precaution, and carefully watched, I know of no other available means of treatment but one. The exceptional means referred to is the removal of the ovaries, and the putting a stop thereby to the sexual life of the patient. For an appreciation of how far this is permissible, or safe, or effectual, I must again refer my reader to the chapter treating of oophorectomy (Chapter XVII.).



FIG. 102. Simpson's Galvanic Intra-uterine Stem



FIG. 103. Barnes's Galvanic Intra-uterine Stem

Stenosis of the Cervix Uteri.

Much as I shall have to insist on the essential differences which exist, anatomically, physiologically, and pathologically, between the cervix and body of the uterus, clinical necessities sometimes compel us to overlook them in an orderly description of uterine diseases. From the consideration of the whole organ as insufficiently developed, we turn to that of the cervix alone as abnormally contracted. By stenosis we understand contraction; by atresia, obstruction of a canal. Atresia has already been spoken of as it occurs congenitally or otherwise in various parts of the genital tract. Stenosis or contraction of the cervical canal is met with as a cause of dysmenorrhœa and sterility. In the one case it causes painful outlet of menstrual products, in the other difficult or impossible inlet of the fertilizing semen. As we shall afterwards see, it may also give rise to, or aggravate, endometritis, by causing retention of the uterine secretions.

Nature and Causation.—Cervical stenosis may arise from traumatic causes, or from inherent or congenital malformation, or from catarrhal inflammation of the canal, and our attention is called to it either by persistent dysmenorrhœa or by unfruitful marriage. Among the traumatic causes the abuse of strong caustics is undoubtedly very common, but gonorrhœal catarrh, or severe labour, with laceration and subsequent cicatrization, may eventuate in the same result, and amputation of the cervix for hypertrophic enlargement, if not carefully watched, is apt to cause contraction of its canal. Congenital stenosis of the canal occurs in connection with the infantile state of uterus which has just been described, and causes, by its obstructive tendency, the chief morbid symptoms in that affection. But a state of the cervix very different from that met with in infantile uterus is sometimes found, equally stenotic and equally obstructive; this is the long conical cervix which



FIG. 104.—The Long Conical Cervix Uteri

is frequently found to exist in obstinate dysmenorrhœa. In this condition, not necessarily or even frequently accompanied by infantile fundus, the cervix is longer than normal, its intra-vaginal part may measure even as much as two inches; it is always conical in shape, and firm



FIG. 105.—The Virgin and the Parous Uterus contracted (after Sappey) A, the Virgin; B, the Parous.

in consistence, and the os is felt to be but a small round pin-hole (fig. 104), very different from that which is found in either the virgin or the parous normal uterus (fig. 105). In this affection the stenosis is usually confined to the external os, and the rest of the canal may even be dilated, so that it may contain a considerable quantity of viscid irritat-

ing mucus, which is sometimes seen to escape with a gush after partial dilatation of the os externum. The usual symptoms of obstructive dysmenorrhœa are nearly always present. Stenosis at the internal os is a much-disputed phenomenon. True organic constriction is certainly rare, if it happens at all, but a certain amount of spasmodic resistance undoubtedly encounters the sound not infrequently, and may also retard the passage of clots, and the results

of treatment lead me to think that it is sometimes not wholly spasmodic.

Obstruction of the canal by the doubling over of a flexed uterus is not true stenosis, and will be considered as a phenomenon of uterine flexion. A little careful manipulation with the sound, combined with elevation of the flexed fundus by the guiding finger through the vagina, shows that organic stricture of the passage is absent.

The *treatment* of stenosis of the cervix, if uncomplicated by other uterine disease, is capable of tolerably clear definition. The management of infantile uterus has been already described, dilatation or incision of the contracted cervix forming a part of it. The long conical cervix usually requires enlargement of its external orifice only. This contracts and recontracts after dilatation by tent or sound, and is best divided at once by the hysterotome, if the nature and localisation of the stricture are clear. The bilateral incision is permissible here on account of the limited amount of the cervix which requires incision. There is comparatively little risk of interfering with the uterine vessels or the pelvic cellular tissue. For the methods of dividing the cervix (*see* preceding Chapter). In the case of a very great elongation of the cervix only, it must be treated, as we shall recommend in speaking of hypertrophy, by amputation of a portion of it (*see* Chap. IX.).

Uterine Atrophy.

When speaking of infantile uterus we have referred to one condition which is by some writers described as an atrophy, although clinically we have held it as rather an arrest of growth. True atrophy may however exist,—a shrinking from the normal size to which the organ has at one time attained. The leading *symptom* is the complete, or almost complete, disappearance of menstruation, which is generally accompanied by debility and by liability to various hysterical or neurasthenic symptoms.

Causation. Atrophy is common, indeed it is the rule, in old age, when the organ is not enlarged by the previous results of child-bearing, by chronic inflammation, or by other affections leading to its hypertrophy as a whole or in part. The amenorrhœa of phthisis and other debilitating diseases is sometimes associated with atrophy of the whole organ, although in such cases the latter is doubtless often a congenital rather than an acquired state. In these instances the general disease alone requires treatment. Atrophy may also occur after pregnancy, from an excess in the process of involution. I have mentioned (p. 128) one extreme case of this, but doubtless it occurs in a very limited degree

in many instances, accounting for some cases of a single birth not followed by others, or not until many years have elapsed. Many times, however, such prolonged pauses are due to chronic inflammation. Protracted lactation has been assigned as one cause of atrophy, although an opposite condition of things has seemed, in my experience, more often to result, and is more consistent with the view that mammary irritation is a utero-ovarian stimulant. Great hemorrhage during parturition, and during involution, is another alleged cause, as is also the action, partly mechanical and partly vital, of surrounding inflammatory adhesions. It is stated also, by F. Barber, to have occurred after the removal of fibroid tumours, and by Battey, after the removal of the ovaries. Great obscurity, however, surrounds the whole matter of causation.

The atrophic uterus is *diagnosed* precisely as is the congenitally small one, the sound being used most carefully, and these two are differentiated by their history, and by the absence in the former case of the marked and distinguishing anatomical peculiarities of infantile uterus.

Treatment. If the atrophy be from old age or from general debility, it must, as far as regards local measures, be left alone. If it appears to result from the effects of super-involution, and the woman is still of the child-bearing age, and if the atrophy leads to dysmenorrhœa rather than amenorrhœa, as it may do when the ovaries and general system are otherwise in full working condition, dilatation of the cervix and the introduction of an intra-uterine stem pessary are permissible, to stimulate the uterus to growth. The amount of sensibility of the organ is the best guide as to the safety of this procedure.

Inflammation of the Uterus (*Metritis*).

Under this heading we have to consider what is perhaps the most important and at the same time the most difficult part of gynecology, the latter especially to the student and young practitioner. The importance of the subject no one who has been in charge of a *clinique*, where the women of the poorer classes constitute the majority of the patients, will deny; although it does not in any way follow that he must adopt the foolish and reprehensible plan of basing a special gynecological pathology upon this or any other single pathological departure frequently met with.

The newest and most brilliant achievements of modern gynecological surgery are all very well in their way. Ovariectomy, hysterectomy, vaginal plasties, &c., are most striking in their results, when

we see them grouped in the practice of the few, but they are only concerned with a small fraction of human suffering, compared with that which is daily and hourly, too often vainly, demanding relief at the hands of the great body of the medical profession, on account of chronic inflammatory affections of the uterus. Sometimes as the cause, sometimes as the effect, of other uterine diseases, or of various morbid states of the system, metritis meets us at every turn, and for want of the time and hygienic conditions necessary to its cure, it continually baffles our efforts at permanent relief. The pure physician scornfully ignores it, or turns it over to the womb doctor. The pure surgeon, or even the specially gynecological surgeon, is often occupied with more enticing subjects, the charlatan preys upon it, and the all-round practitioner too often gives it up in despair, and applies his local remedies, only in the hope or the expectation that the patient will, by and by, transfer her case to some one else. The difficulties of the subject depend not only upon the intractable nature of so many of the cases, but also upon the obstacles which many meet with in acquiring such a clear knowledge of the pathological facts involved as will fit in with and lead to definite principles of treatment. I have found the mere nomenclature of the subject more difficult to the student than might be supposed by those who have gradually become accustomed to it, through long experience in special clinical work; and when a ready familiarity with such terms as chronic endocervicitis, acute fundal parenchymatous metritis, and the like, has been acquired, his first few years of home practice seem to dislocate once more his precise theoretical notions on the subject, and to reduce him again to a state of doubt and difficulty in the management of cases which will not observe the clinical distinctions he has laboriously mastered. And lastly, in his daily practice, as in his reading, he finds the exciting causes of inflammation, and the various results which arise from it in different patients, so intermixed, that another element of great practical difficulty arises. This description may be overdrawn in the case of some practitioners, but I know that it faithfully describes my own case at one time, as well as that of many who have honoured me with their confidence. I hope to meet some of these difficulties by indicating, in the first place, as clearly as I can, the separate forms of metritis, which are pathologically, and often, though by no means always, clinically, quite distinct from one another; a knowledge of these separate forms and of their distinctive appellations, being a necessity for those who would understand what is written on the subject in current literature, and the only sound basis for rational treatment. Secondly, I hope to discuss the treatment of metritis in its various separate or combined forms, without being too much hampered by the above distinctions; and, thirdly, I will endeavour, as far as

possible, to keep separate the complications which flow from, or are the after results of, inflammation of the uterus, though dealing with them in the pages immediately following.

To understand then the different types, forms, or degrees of uterine inflammation, it is necessary to bear clearly in mind three things.

In the first place, the uterus consists of two distinct portions, the body and the neck. These are distinct anatomically, shaped differently, separated from one another by the internal os, and lined with a different form of epithelium, having totally different glandular structures. They are equally distinct physiologically, the cervix taking no part in the wondrous monthly changes in, and exfoliations of, the uterine mucous lining, nor in the provision for the coverings and nutrition of the impregnated ovum. They are, therefore, distinct pathologically also, being liable in very different degrees to the invasion of malignant affections, and to the attacks of inflammation. Hence we have a clear division of metritis into two forms, fundal or corporeal (I intend to use the latter term, as less liable to cause mistake), and cervical.

Metritis may be (A) corporeal, (B) cervical.

2ndly. The uterus, whether body or neck, consists of two elements not the sole ones, but the sole ones for our purpose—a parenchyma and a mucous lining. These are also distinct from one another, anatomically, physiologically, and pathologically. The one element may be inflamed with or without the other, and a knowledge of the separate affections of each is of great practical importance in treatment. A local, or even a general remedy, intended to affect the mucous lining of a viscus will not affect in a similar way its surrounding parenchyma. The physician treats bronchitis on other principles than pneumonia, intestinal atony by other means than intestinal catarrh, so it is with the uterus.

Metritis may be (A) parenchymatous, (B) mucous.

To indicate the latter we use the prefix *endo*.

Hence we have—

1. Corporeal parenchymatous metritis.
2. Corporeal endo-metritis.
3. Cervical parenchymatous metritis.
4. Cervical endo-metritis.

Lastly. All inflammations may be acute or chronic, and although in all cases there may exist the intermediate "subacute" forms, in none are the boundary lines between acuteness and chronicity more practically distinct than in uterine inflammations. Hence we divide metritis, for the purposes of description, into eight forms:—

- a. Acute corporeal parenchymatous metritis.
- b. Chronic corporeal parenchymatous metritis.
- c. Acute corporeal endo-metritis.

- d. Chronic corpuscal endo-metritis.
- e. Acute cervical parenchymatous metritis.
- f. Chronic cervical parenchymatous metritis.
- g. Acute cervical endo-metritis.
- h. Chronic cervical endo-metritis.

Every one of these terms has a definite meaning, representing unmistakably a pathological state, and the very short period required to familiarise himself with them will not be wasted by the student. When the term "corpuscal" is dropped, as it is by many writers, it must be understood, unless a term pointing to the cervix is used; and the term "endo-cervicitis" is but a shortening of cervical endo-metritis. We shall see that some of these terms, e.g., chronic cervical endo-metritis, or acute corpuscal parenchymatous metritis, describe affections met with almost entirely alone, while others are so frequently combined as to be of less individual clinical importance. It will be well, therefore, instead of attempting to describe the symptoms, signs, and treatment of each of the eight forms of metritis, to try now to group them, as nearly as possible as they group themselves under clinical observation. In the first place we will separate the acute from the chronic forms of uterine inflammation, and I think it will be apparent that this is a useful and practical division.

Acute Inflammation of the Uterus.

This may affect the parenchymatous and mucous tissues, together or separately, — much more commonly the mucous than the parenchymatous tissues alone, — and may attack either the body or the cervix, or both.

Acute Parenchymatous Inflammation is, fortunately, not very common, and is nearly always traumatic or septic in its origin, although occasionally met with as a result of cold or sudden suppression of menstruation. Among the traumatic causes we may include the unfortunate use of dilating or cutting instruments on the cervix, injurious intra-uterine treatment, tearing of the cervix during labour, or septic absorption after labour or after pelvic operation, in the various ways in which absorption is possible. Proceeding from these causes, it is seldom quite uncomplicated. To some degree, either the mucous lining of the uterus (endo-metritis), or its peritoneal covering (peri-metritis), or the cellular tissue of the pelvis (para-metritis) are generally involved at the same time, but the purely uterine inflammation may be the marked and almost sole feature of the case.

Symptoms. Acute pelvic symptoms, with high fever, are present from

the first, and the pain and tenderness are almost completely localised. They will be experienced even on slight pressure over the fundus uteri, or upwards against the cervix, or especially on bi manual pressure at both ends of the uterus. The uterus, although it seems heavy, is not fixed as it speedily becomes, however, if there be much inflammation of the surrounding structures, leading to the exudation of lymph below, around, or above the organ. A previous attack of this, of which there should be a distinct history, may, however, have fixed the uterus in any position. Whatever swelling there is will be evidently connected with the uterus, and will have the contour of that organ, enlarged but not altered in shape. Whenever there is abdominal tympanites, or when sickness is a prominent symptom, the peritoneal covering of the uterus and its contiguous parts is almost certainly involved. If the cervix is involved as well as the body, the swelling and tenderness will be felt there also. There will be little or no purulent discharge from the os externum, unless the mucous lining also participates in the inflammation. An absolutely pure and uncomplicated acute metritis of this kind is seldom met with, signs of pelvic inflammation being generally found also if carefully sought for. While it continues it is always of grave import. Evidences of general toxæmia are apt to present themselves at any moment. If the affection remain local it will probably subside in a comparatively short time, either completely disappearing, or leaving behind it a condition of chronic tenderness and pain. Suppuration may occur within the uterine walls, and this may be of a multiple character, discovered, perhaps, only after death, as multiple pyæmic abscess; or it may concentrate and burst into the cavity of the organ, and ultimately end in recovery. But uterine abscess, fortunately rare, is at all times a dangerous phenomenon, owing to the numerous absorbent points which are met with in the organ.

Treatment.—The treatment of uncomplicated, or only very partially complicated, acute parenchymatous inflammation of the uterus resolves itself into (a) the removal of any persistent cause; (b) the relief of prominent symptoms, especially pain; and (c) the reduction of fever.

The removal of persistent causes must never be forgotten, especially in puerperal cases. I take this opportunity of strongly reminding the practitioner that septic poisoning has two distinct clinical forms. In the one, we have the absorption of a *contagium vivum*, of living germs, which seem to grow and multiply after absorption, and whose deadly work is for the present almost beyond the reach of art; in the other we have the toxic influence of fluids, probably also due to bacteric associations, but of which nature speedily gets rid if further absorption can be prevented. The former demands internal remedies, yet I fear to be discovered, which shall so influence the living germ within the system as

to reduce them to innocuousness; for these we look to the practical results of the patient work of Koch, Pasteur, and other similar investigators. But I often wonder whether the benefit which our forefathers attributed to mercury in the treatment of acute inflammations has any connection with the acknowledged germicide properties of corrosive sublimate. Surely any feasible hint is worth following out in this forlorn region of therapeutics. The second class of intoxicants is met by the formula "wash and be clean." In every case of metritis, therefore, where septic influences play a presumptive part, the vagina should be frequently syringed in the most gentle yet careful manner with warm water, carbolised or otherwise rendered antiseptic. When this is ineffectual in speedily reducing the temperature, and other wise relieving the symptoms, a double catheter should be carefully inserted into the uterine cavity, and any products of decomposition thus washed away. Of course, if any *post partum* or other debris are perceptible to touch, and for this end the cervix may require dilatation, they should be carefully removed by the finger or the curette.

The second indication, relief of pain, is of almost equal consequence. In all visceral affections pain is apt to be one of the chief destroying agents, and "to obviate the tendency to death" is the foremost object of the physician. The subcutaneous injection of morphia is generally the most satisfactory way of using opiates in this affection, but morphia suppositories, or even opium or morphia by the mouth, may be used; however opium is given, it should be given freely. When opium does not agree, belladonna may be used, in suppositories of gr. iii. of the extract, or a much larger quantity may be smeared on the abdomen. The application of warmth also fulfils the condition of relieving pain. Hot fomentations, medicated with laudanum, are useful for this purpose, unless the weight of a good large linseed poultice can be borne; and the water which is injected into the vagina for antiseptic reasons, should be as warm as it can comfortably be used. Unless there is too much local suffering, the patient may, according to Emmet's method, have the pelvis well raised, and brought towards the side of the bed, when a continuous stream of hot water may be allowed to flow from a reservoir raised above its level.

The third indication, the reduction of temperature, is chiefly of importance in septic cases. For this purpose the use of hot applications may be abandoned, and cold may be applied to the abdomen and even to the extremities in ice bags, or applied to the head by Thornton's ice-cap, consisting of a long tube curled into the form of a cap, through which a stream of ice-cold water continuously runs. Quinine, in full doses (gr. v. to x. or even xx.), has also a great reputation for its antipyretic qualities, though I confess it has nearly always disappointed me. Salicine in

its various forms I have found more reliable, although its depressing action must be watched. Fifteen grains of soda salicylat. may be given every few hours. *Veratrum viride*, ℥iij. to v. of the tincture, frequently, is much relied on by many American writers for the reduction of the pulse, and, to some extent, of the temperature; and tinct. *aconiti*, ℥ii. to v., has a similar reputation here. My colleague, Dr Leech warmly extols the use of Antipyrin, a compound introduced by Knorr of Erlangen, and now pretty widely used in Germany. Filchne finds that "it effectually reduces febrile temperatures in doses of 30 grains, rarely causing vomiting, and never other evils" (*Medical Chronicle*, Oct. 1884, p. 51). Dr Leech is, however, evidently of the same opinion as myself, that the reduction of temperature has been too often taken for granted as involving the cure of the affection which causes it.

In addition to these main indications, the bowels should be kept quiet, as will be done by the opiates, but the rectum should be gently emptied by enema at the commencement, or afterwards if it become loaded with scybala. Fluid nutriment must be given from the first, as the stomach will bear it, and stimulants, when exhaustion is showing itself and the temperature is running high. Abdominal leeching in the commencement, and free blistering of the abdomen when the acute stage is fairly past, have each their strenuous advocates; and it is sometimes almost impossible to doubt the good effect of either, especially the former.

Acute Endo-metritis.—Acute inflammation of the mucous lining of the uterus, with but little parenchymatous extension, may result from precisely the same septic, traumatic, or other causes as the parenchymatous form, which we have just been describing; but the extension of gonorrhœal or non-specific acute vaginitis is also a frequent cause, and especially the abuse of vaginal injections when purulent vaginitis is present. Under these circumstances the body and the cervix are apt to be both equally affected, although the chronic affection very frequently implicates the latter without the former. There are the same symptoms of heat and tenderness in the mucous as in the parenchymatous inflammation, but these are, at first at any rate, even more distinctly uterine, presenting less resemblance to peritonitis. The cervix is acutely sensitive to touch, and there will be found very early a flow of pus from its cavity, mingled in very acute cases with bloody streaks. The introduction of a sound, if attempted, which it should hardly ever be, is productive of great pain, although the cervix is usually patulous. This affection is apt to be complicated, by and by, with extension backwards to the Fallopian tubes or ovaries, and peritonitic symptoms thus become developed, which may, in gonorrhœal extension, prove rapidly fatal. We have less to fear in these cases from general septicæmia

than in parenchymatous inflammation, and more from local inflammatory extension.

The treatment, while the acute stage lasts, is not very different from that of parenchymatous inflammation. The relief of pain, and the reduction of fever by antipyretics, the latter less often an urgent necessity, are conducted on the same principles; but, bearing in mind the dangers of further extension by contiguity or by the infective purulent discharge, vaginal injections must be very carefully managed. A strong stream must always be avoided; the freest possible outflow must be provided, the raised pelvis, with consequent backward pressure of the injected fluid, is inadmissible, and intra-uterine injection is to be totally prohibited. It is only when the affection has become chronic that intra-uterine applications of any kind, carefully prepared for by dilatation of the cervix, can be considered as available means of treatment.

In this brief, but I think sufficient, description of acute inflammation of the uterus—of its two main components, parenchyma and mucous membrane—we have been able to regard these structures apart, for practical purposes, while admitting that their pathological affections are often to some extent merged and combined.

Chronic Inflammation of the Uterus.

In describing chronic inflammation of most organs, one drifts into it, as it were, from the acute stage, and undoubtedly many cases of chronic metritis, or endo-metritis, are simply the after stages of clearly marked acute attacks. But acute metritis of any kind is fortunately very rare in comparison with the number of cases of chronic disease we meet with in the body or cervix, parenchyma or mucous lining. If the chronic stage does not originate *de novo*, at least we may say that its acute forerunner is often evanescent or unnoted, and its localisation as a cervical or a corporeal, a mucous or a parenchymatous, affection, is often more distinct than in the acute form. Convenience for descriptive purposes can alone decide in which order we should speak of the four chronic inflammatory lesions—*cervical endo-metritis*, *corporeal endo-metritis*, *corporeal parenchymatous metritis*, and *cervical parenchymatous metritis*.

Chronic Cervical Endo-metritis.—This is so common an affection that the gynecologist might almost be pardoned for considering it as normal, at any rate in the married woman. As a simple catarrhal affection it is only second in frequency to vaginal catarrh or leucorrhœa, and if its discovery and local treatment were always an im-

perative necessity, a large proportion of our women would have to be life-long patients for so-called "ulceration of the womb." Very few women, in hospital practice, do not, if examined, show some slight sign of erosion of the os externum (see Frontispiece No. 2), with some purulent or muco-purulent discharge from it. Ranging upwards from this, there is every degree of the affection, up to that in which we find the os and cervix uteri torn, bloody, everted, bathed in purulent discharge, covered with abundant granulations, swollen, and often enlarged by inflammatory hypertrophy of the parenchyma as well (Frontispiece No. 5). It is advisable to regard the slighter forms of this affection apart from the more severe, although there may be no precise boundary line capable of accurate definition.

Symptoms—In an ordinary case of cervical endo-metritis, such as is of almost every day occurrence, the symptoms may be almost absolutely *nil*, or there may be a considerable amount of lumbar pain, and general *malaise*, accompanied by profuse leucorrhœal discharge externally. If menstruation is increased or otherwise disordered, this will generally be due either to some amount of affection of the mucous membrane of the body, or to inflammatory hypertrophy of the parenchymatous tissue, or to an excessive amount of granular degeneration of the mucous membrane of the cervix, the result of long-continued affection, or to some other concomitant affection of the womb. It is very seldom that the patient does not suffer from debility and anaemia, from derangement of her digestive system, and from general depression of nerve force. On examination there may or may not be tenderness of the affected part, but the speculum alone will fully reveal the *diagnostic signs*. These are twofold,—1st, the occurrence of characteristic discharge from the os uteri, and 2nd, the appearance of the mucous membrane itself, as far as it can be seen. The discharge is in most cases truly purulent, bathing the whole surface around and within the os, or sometimes only oozing out in drops. The purulent discharge is, however, often absent for a time, and its place is taken by a clear, glairy, tenacious fluid, exactly like unboiled white of egg, which is most difficult to wipe away completely, requiring several applications of the cotton-tipped probe, both dry and moistened with glycerine. The appearance of the os itself will vary according to the long or short continuance of the affection, and will often alter much at short intervals, or owing to very trivial remedies. In few cases is there not some redness, if it be only at the small orificial point, but the membrane is nearly always puffy and swollen, and covered with fine velvety granulations of a brightish red colour; the opening is generally freely patulous, and the granular condition extends inwards as far as can be seen, and outwards over the vaginal portion of the cervix. This characteristic erosion and granulation of the cervix, denuded of its

purulent covering, are the first objects usually shown to the student of gynecology, and soft as they are when not lying on a hypertrophied cervix, they soon become familiar to the educated touch, without the aid of the speculum. Bear in mind that they are in no sense ulcers, but simply alterations of the mucous secreting surface. Not infrequently we find that the special glands of the cervix, the glandulæ Nabothi, assert their existence by projecting from the raw surface, and if their contents become puriform, we have an appearance much the same as in vaginal or vulvar follicular inflammation; this is especially true in those cases which succeed to or occur during pregnancy, when the glands are hypertrophied as a normal condition (Frontispiece, No. 3). The whole cervix may be considerably swollen and enlarged from mucous tumefaction alone, but this enlargement is increased indefinitely when there exists at the same time chronic thickening of the parenchyma. The contour of the os and cervix may be perfect. It will be in a nullipara who has had no surgical experiences; but in those who have borne children it is often, I had almost said generally, fissured to some extent, and the erosion will extend into the fissures (Frontispiece, No. 4). Such fissures are, however, frequently met with in women who have no present cervical metritis, and with a perfectly healthy covering of mucous membrane, but when they exist to a great extent, especially if they are lateral, they cause much gaping of the os, and undoubtedly they add to the difficulty of cure, and tend to promote or perpetuate the chronic inflammatory condition. Their surgical treatment has during the last few years become a subject of considerable discussion, but, bearing in mind our desire to separate the consideration of metritis from that of complications which are not essential to it, we shall return to that matter again, and we shall also consider a little more minutely in the next chapter the varieties of these chronic local affections.

Treatment.—Taking the affection of chronic cervical endo-metritis in its most common and only moderately severe form, how far can it be made the subject of legitimate and successful treatment? The first thing to bear in mind is that it is almost always an expression of constitutional or general disorder, and this applies equally to those cases where there is nothing more than a catarrhal discharge, and to those in which the signs of more advanced pathological changes are manifest. Chronic endo-cervicitis of the hospital out-patient room is almost incurable, for the simple reason that we cannot cure the underlying constitutional state. To cure the disease we must, as in chronic vaginitis, first cure the patient. To recapitulate all the steps which may, in individual cases, be necessary, would be to write a treatise on hygiene. The food must be made suitable to the patient's digestion, which must in turn be remedied when faulty. All the resources of the physician may be called forth to combat impaired nutrition in its protean forms, and to restore

healthy innervation. In the next place we must ask ourselves, is the cervical affection a result of the disordered circulation due to uterine or pelvic disease of another character—to flexions of the uterus, to pelvic congestion of ovarian origin, or to old pelvic inflammatory mischief? If so, these must be treated *pari passu*, or generally as antecedent to successful removal of the cervical condition. Next we must see if there is anything wrong with the sexual relations of the patient. Masturbation is a difficult matter to approach. I believe it to be more rare in the female than is often supposed, in spite of some very objectionable statements and experiments which have recently appeared in our periodic literature, and to which I prefer not to make more specific reference, but there are cases in which it becomes the duty of the physician to suspect, and to give such advice as his most delicate instincts will suggest. Abuse of the marital functions can always be ascertained through the husband. Too frequent child-bearing has but one sure remedy. Frequently-repeated miscarriages are the bane of female married existence. Next, the possibility of upward extension of chronic inflammation from the vagina must be borne in mind, and chronic vaginitis must be treated in the usual way, especially if there is any gonorrhoeal taint. All these things being borne in mind (and though to the tyro they may seem interminable, yet to the practical physician they for the most part fall in with his daily routine of observation and instruction) what remains to be done of a local nature, and how far will it conduce to successful removal of the affection? I fear it is an undoubted fact that much opprobrium has been cast upon medicine, and especially upon its gynecological department, by the ignorant practice of long-continued local applications to the uterus, in the vain hope of curing "ulcerations," which are no ulcerations at all, but merely the evidence of a disordered mucous membrane, which in its turn is only an evidence of other uterine disease, or of a system below par. To treat cervical endometritis it is not enough to be able skilfully to introduce a speculum, and to be furnished with a list of caustics, as long as the patient's or practitioner's endurance. A complete knowledge of uterine, ovarian, and pelvic disease is necessary, without which local applications may often be continued *ad infinitum* with no results except of the most fleeting nature, or, still worse, with results of a baneful character. Yet it is but reasonable, and it is true, that while more important means are being pursued to obviate the causes of cervical catarrh or inflammation, some local treatment, at the same time, may greatly expedite a permanent cure. What, then, are the *juvantia et ledentia* to be used or avoided? Speaking of such ordinary cases as have been described, I have no hesitation in placing in the latter class—in the class of hurtful remedies—all powerful escharotics which have for

their purpose, or effect, the destruction of the membrane itself, of its mucous follicles, or of any other physiologically essential structure. Nitric acid, fluid nitrate of mercury, glacial acetic acid, chromic acid, the actual cautery, caustic potash, and other strong remedies of this kind, must be utterly tabooed as wrong in principle and in practice. They may for a time arrest the action of a suppurating surface, by utterly destroying it, but they leave untouched the sources of disease, and, as long as there is any mucous surface left, the unhealthy action will continually recommence. When all is destroyed we shall only have the disease transferred to the deeper tissues, with every symptom, except perhaps free suppuration, aggravated. Moreover, we shall almost certainly bring about a state of contraction of the passage which may lead to much subsequent suffering from dysmenorrhœa or hæmatometra. To be of use, local remedies should be of such a character as will merely modify disordered action, and should stop far short of destruction. A list of such remedies need not be a long one; we must trust to their judicious and timely use rather than to their numbers. Such a list would comprise—

1. The use of cervical tents.
2. Scarification or incision.
3. Hot water.
4. Antiseptic and astringent vaginal injections.
5. Glycerine and glyceroles.
6. Other local alteratives; carbolic acid; iodine; iodoform; nitrate of silver; bismuth; sulphate of zinc.

1. *Tents*.—The use of tents (fig. 29) is limited in endo-cervicitis, and when the affection is even subacute it should be forbidden. When, however, the red villous surface is thick, and when it is difficult or impossible to apply remedies within the cervix, the introduction of a small tent for a few hours (I prefer the sponge tents for this purpose) will produce the requisite amount of dilatation, and its compressive action will often be found to excite absorption to a considerable degree. A clean, well carbolised tent, not retained too long, will seldom do more than this, but in irritable patients, or when there is any febrile action present, or when there is any evidence, or even suspicion, of former pelvic inflammation, the risk of other consequences should never be run.

2. *Scarification or Incision* of the os externum. This remedy is also one requiring consideration before it is used. When the os uteri is contracted, when dysmenorrhœa is present, and when there is considerable enlargement of the surrounding viscera, two or three incisions, $\frac{1}{8}$ in. deep, dividing what may be termed the external sphincter, will often do good by letting a little blood flow, and if prevented from healing by the occasional insertion of the point of a bougie, the enlarged opening of the os

will be of use in the subsequent treatment. Frequent scarifications are seldom, if ever, necessary, and are never without some risk, however slight, from septic absorption.

3. *Hot Water.* I have already so often referred to the value of Emmet's treatment by hot water injections (105° to 110°), with the raised pelvis, as a means of diminishing pelvic congestion, that I need only here state that the practice is also of not infrequent advantage in cases of chronic cervical endo-metritis, as a means of combating the symptoms of pelvic fulness and tension, which are sometimes a consequence of the cervical affection, but more often a cause of its long persistence. It may be used, night after night, for a week or two, until the symptoms have abated, and it does not contra-indicate the use of other remedies during the day.

4. *Antiseptic and Astringent Vaginal Injections.* As a rule, mere astringent vaginal injections have little influence on endo-metritis. They do not reach the whole of the affected part, and their use may even prove irritating and hurtful. But, bearing in mind the frequency with which catarrhal extension from the vagina to the cervix takes place, and also the important part played by leucocytic bodies in the propagation and causation of suppurative disease, it will be found that in many cases, where chronic purulent discharge is abundant, whether from the cervix itself or from the vagina, copious antiseptic injections of carbolic acid, boracic acid, or other substances mentioned in connection with vaginitis, exert a marked and favourable influence on ordinary endo-cervicitis. They can be used by the patient herself in the intervals between the physician's visits.

5. *Glycerine and Glyceroles.*—Glycerine exerts a remarkable local influence on the uterus, not exactly specific, but dependent on its property of extracting moisture from the uterus and from the contiguous parts, thus tending to diminish their bulk, and altering the action of their secreting surfaces. It is therefore, in all cases of metritis, and especially where the cervix is chiefly affected, a most valuable remedy. Even when merely injected into the vagina (3i. ad. aquae 3ii.) it occasionally produces beneficial effects, but to assure its full action it must be used in the form of tampon, as directed above. Under this treatment, continued for a week or two, or alternated nightly with the hot-water treatment, many most unpromising cases speedily improve. The swelling of the cervix diminishes, and the discharge, at first more abundant but more watery, diminishes also, while tenderness and the feeling of weight disappear. It is a veritable local alterative, and injures nothing. No speculum is needed for its use. The patient herself can insert the plug and push it steadily but gently home with the vaginal injection tube. The glycerine plug may also be made the means of using astringent or antiseptic substances, such as do not require to be accurately applied to

the cervix, and the glyceroles of tannic and carbolic acid are especially useful. They may be used in the proportion of about one half to one-fourth of the official strength.

6. *Other Local Alternatives.* Very many substances have thus been used, and highly recommended. I have pronounced strongly against those which are too powerful or escharotic, on grounds which I think valid, except in cases of special severity, to be afterwards separately considered. The best local alternative I know is carbolic acid, used only of sufficient strength. Pure carbolic acid ranks to a slight extent with the destroyers of tissue. But diluted two or three times with glycerine, and applied to the affected surface only, it exerts a healthy alterative influence, while its sedative action on pain is not lost. My colleague, Dr D. Lloyd Roberts, was one of the first to call attention to this beneficial use of carbolic acid. Iodoform ranks perhaps next as a useful and safe alternative, but its nauseous smell is somewhat against it. Mixed with four or five parts of balsam of tolu or of oil of cassia, it is sufficiently active, and its unpleasantness is much diminished. Iodine exerts its alterative influence when applied locally to the cervix. It is strong enough for this purpose in a solution of 20 grs. to the ounce of glycerine, with a few drops of spirit, and I think that, as for most local remedies, glycerine is the best solvent, the absorption being slower and more certain. All these remedies must be applied carefully and accurately to the abraded and secreting surface of the os and cervix. For this purpose the Playfair's probe (fig. 9) suffices, and the duck-bill or bi-valve speculum will be necessary if there is much laceration. The probe is slightly bent, so as to follow the cervical canal, then well coated with cotton. The fluid is thoroughly soaked into it, and all redundant fluid is wiped off. The outer circle of granulation is smeared with it, and it is passed into the cervix as far as possible without force. Such fluid as tends to run down into the vagina is wiped away, or a dossil of cotton moistened with glycerine may be placed at the upper end of the vagina, with a thread attached by which the patient may remove it. Where iodine is used, this plug is especially desirable, to avoid injury to the patient's linen. With regard to all these applications, it must be borne in mind that they are only part of a system of treatment, that their good effects will be observable after a very few applications, at intervals of from three to seven days, if at all, and that the absence of visible results should lead, not to perpetual and useless repetition, but to a renewed search for other than local means of treatment. Nitrate of silver has been much abused by being applied in stick, and with great frequency. Used thus, it produces destructive effects, but applied only occasionally, in moderately strong solution, say 15 grs. to the ounce, it simply modifies or alters the state of the parts, and is a useful addition to our

remedies of the kind. Sulphate of zinc or copper is open to nearly the same objection. In ordinary endo-metritis, the sticks of the solid salts, intended to be inserted into and left in the cervix, become too escharotic. There is no objection to these agents as styptics merely, in strong solution, or lightly applied in the solid. In irritable states, when all local applications or examinations seem to aggravate discomfort, and increase the signs of disease, bismuth nitrate or carbonate, is often of great value. It should be used as nearly as possible pure, in fact applied to the raw surface in powder, by a pledget of dry cotton, or by insufflation. The oleates of lead and zinc have, however, a similar soothing effect.

I have spoken of a graver type of chronic cervical endo-metritis, in which the use of remedies, otherwise forbidden, may be necessitated (Frontis piece, No. 5). Such cases are characterised by the kind of granulations met with, these being thick, sprouting, and vascular to a much greater degree, unamenable to ordinary alteratives, and preventing any success in creating again a healthy surface. The glandular tissue is largely destroyed. Such cases are always complicated with parenchymatous inflammation, and often with corporeal endo-metritis, and they are especially common in connection with wide, gaping tears of the cervix. They are generally, if not always, the sequel of neglected treatment, or of treatment based from the first on the use of destructive local applications. But now the destruction of fungating tissues becomes a necessity, in the hope that nature will still supply some sort of reparative covering of the parts, even if it be physiologically imperfect. In such cases, a fair trial having been given to the remedies just described, especially to the use of hot water, glycerine, and iodine or carbolic acid, something more must be done to check the wasting discharges, purulent and often sanguineous, to relieve continual pain, and to restore a passively quiescent, if not absolutely healthy surface. The thick fungosities must be completely destroyed, and, the necessity being recognised, no halt measures are advisable. The question of reuniting the torn edges of the fissures which may exist will be discussed further on. To destroy the unhealthy diseased surface, and to restore what, by comparison, may be termed a healthy one, two methods are at our disposal—the one by mechanically scraping and tearing them away, the other by destroying them with escharotics. For the former purpose, the whole visible fungating surface, when well exposed by the duck bill speculum and adjuncts, may be shaved with a sharp knife, just as is done preparatory to plastic stitching of torn portions; indeed, it is very probable that much of the good effect ensuing from some of the plastic operations referred to is the result merely of the paring away of diseased tissues. A curette is commonly used for the purpose. This instrument, originally invented or used for the purpose by Recamier, has been previously described, and any of the modifi-

cations by Sims (fig. 58), Thomas, Simpson, or others, will serve for the cervix. This is well exposed and fixed, and every portion of redundant granulation is freely scraped away. Hæmorrhage is then arrested by the application to the whole surface of strong iodine solution (lin. iod.), or of carbolic acid (1 in 5 or 6 parts). Only seldom is a plug required for hæmorrhage alone. The raw surface is subsequently treated as in ordinary endo-metritis.

For chemical destruction of the redundant granulations any of the strong escharotics may be used, but nitric acid is most frequently employed in non-malignant disease. It requires the same free exposure of the parts. Every portion must be freely touched, care being taken to allow none to run down into the vagina, and it is a necessary precaution to pack a pledget of cotton, well soaked in carbonate of soda or potash solution, into the upper part of the vagina below the projecting cervix. This receives and neutralises any overflowing drops. On the whole the removal by curette or knife is the more satisfactory plan, but the nitric acid may be used if a second or third operation be required.

Chronic Corporeal Endo-metritis.

We turn now to endo-metritis of the fundus or body of the uterus. This is, fortunately, to any great extent, a much less common affection than that of the cervix, although authorities differ as to their precise relative frequency. It is clearly demonstrated by numerous *post-mortem* observations that endo-metritis frequently terminates abruptly at a boundary line corresponding with the *os internum*, the upper or the lower portion, corporeal or cervical, being alone affected. But there is considerable difference of opinion as to the frequency of cases in which no such boundary line exists, where undoubted and visible cervical endo-metritis is accompanied by that of the body of the uterus. As the *symptoms* of the two affections scarcely differ, except in degree, the question is frequently insoluble in individual cases, and the presumptive evidence in favour of the combination can only be found in the existence of enlargement of the uterine body, in the tenderness of the fundus which is felt on the introduction of the sound, — often a highly characteristic feature of corporeal endo-metritis existing alone, in the resistance of an apparent slight case to rational treatment, and in the much greater liability, in the corporeal affection, to menstrual troubles. It appears probable, however, that many cases of the corporeal endo-metrial affection recover spontaneously when the accompanying cervical affection is cured; and this may or may not depend on the more complete organic change which the corporeal mucous membrane periodi-

cally undergoes. Although Williams and others have taught us much as to the very different anatomical relations which the corporeal mucous membrane bears to its subjacent structures from those which are met with in the case of the cervix, and although we know how different are the physiological functions of the body and cervix, yet pathology has, so far, done little or nothing to elucidate differences of clinical importance between the chronic inflammatory affections of the body and cervix, beyond showing that chronic inflammation may affect each separately and solely, or in combination; and it is not without consideration that I have omitted much as yet quite unreliable information as to the pathological bearings of the whole subject.

Causation. In addition to the causes which lead to cervical endometritis, obstruction to the menstrual flow, with consequent retention of its products within the uterus for a time, ranks as a not infrequent cause of the corporeal disease. This may occur from cold, shock, exanthematous fevers, or other causes of acute suppression, or from frequent retention due to stenosis of the cervix, and accompanied by dysmenorrhœa; and a large proportion of this, as well as of all other forms of chronic inflammation, is traceable to irregular convalescence after parturition, and still more after abortion. In obstinate displacements of the uterus, either flexions or prolapse, we frequently have accompanying corporeal endometritis, greatly relieved by their reposition. The displacement or the metritis may figure as cause or effect of each other in turn. In the case of polypus or of sub-mucous fibroids also, the accompanying leucorrhœal discharge is not infrequently the result of an actual chronic inflammatory state. The influence of the syphilitic cachexia in producing chronic endometritis is not clearly determined. As in cervical endometritis, there is frequently a predominant affection of the glandular element of the tissues, accompanied by vascular proliferation; and there is the same tendency, in neglected cases, to gradual destruction of the glandular structures, which is perpetuated in every new monthly rebuilding of the lining wall. Sterility is the rule, as might be supposed, during the continuance of corporeal endometritis; and when conception does occur, it probably implies some return to the condition of health, which, if abortion can be avoided, may prove permanent. I know cases, however, where, in spite of all cure, severe chronic endometritis and normal pregnancy have alternated for several years.

The treatment of chronic endometritis of the body of the uterus is conducted on the same principles as is that of the cervix, although the circumstance of its comparative inaccessibility to local remedies throws special difficulties in our way. All that has been said before as to the supreme necessity for hygienic treatment, and as to the removal, if possible, of uterine displacements, and of all causes of uterine engorgement

or irritation, applies equally here. I am satisfied also that the same distinction should be drawn between the use of the milder alterative local applications and of the more destructive ones. It is as barbarous and as unscientific hastily to apply strong destructive acids to the interior of the uterus as to the cervix; to the former it is even more hurtful, and I cannot but think that curetting of the interior of the uterus has also, of late years, been much over-done. The introduction of remedies into the cavity of the uterus is not so light a matter as mere book descriptions might lead many a tyro to suppose. None but gynecologists are aware how often its unskilful or unprepared-for employment leads to acute or subacute attacks which leave matters worse than before. Turning back to our list of local remedies in cervical disease (p. 211), let us see how, and how far, they are available in the corporeal affection.

1. The use of *tents*, and of *searification* of the os externum, is occasionally required for the same purposes as in cervical disease, but it is more frequently a necessity in the corporeal affection, partly because this so often depends on obstructive dysmenorrhœa, when dilatation in some form may be considered as curative in itself, and partly because the application of internal remedies to the uterus demands as a preliminary that there should be a clear inlet for the introducing medium, and a clear outlet for all superabundant fluids, and for all coagula or albuminoid products to which the remedies may give rise.

2. The use of *hot water*, in the same way, has the same great beneficial effect as in cervical affections.

3. *Vaginal injections*, other than those of hot water, cannot in any way directly affect the corporeal disease, but indirectly they may prove useful as local tonics or as destroyers of leucocytic conveyers of disease, the influence of which may extend in every conceivable direction, and is not bounded by anatomical sphincters or even organic tissues, although so competent an observer as Mr Wharton Jones is not yet satisfied on this point (*Lancet*, Oct. 11, 1884, p. 630).

4. *Glycerine*, used as above directed, exerts an influence on every form of uterine or pelvic engorgement, and should therefore not be forgotten even in a case of the most clearly-defined endo-corporeal affection.

5. *Local Alteratives*.¹—I feel inclined to limit the number of local alteratives as strictly as before, and, however numerous the suggested remedies of the kind may be, personal conference with many distinguished specialists confirms me in the belief that these fulfil nearly all the requisite indications. Carbolic acid, iodoform, iodine, and nitrate of silver may be taken as at any rate the types of substances to be

¹ I use this somewhat vague word "alterative" in all cases as meaning that which influences beneficially the nutrition of parts, or of the whole system, as the case may be, independently of any other very clearly definable action.

used; and if they do not avail to produce the desired effects, I fear that little can be hoped for from others of a similar kind. These four remedies, or others that may be experimented with, may be used in the following modes:¹

(A.) *By Medicated Tents.*—There are two ways in which the tent may be made instrumental in introducing remedies into the uterus. By the one method the substance intended to be used is mixed with gelatine, gum, or cocoa butter, in such proportions as to obtain sufficient temporary coherence to allow the mass to be rolled into a pencil and inserted through the os internum, it being then left and allowed to melt. Unless the os be well dilated, something in the form of a special instrument is required. If the mass is moderately firm and the os moderately dilated, Barnes's instrument (fig. 31) may suffice, but under other circumstances the tent must be placed in a large truncated catheter with a well fitting stylet—a small piston tube, in fact—and so pushed through the os internum. The other form of medicated tent is the ordinary sponge instrument, impregnated at its first construction with the necessary fluids or solutions. Alteratives or astringents can undoubtedly be thus introduced, but however agreeable it may be to fulfil two indications by one procedure, there is always the objection that the drug thus used is retained for many hours, no matter what its effects. I think this method is therefore inferior to others, except in the case of antiseptic remedies, in reasonable quantities.

(B.) *As Ointments.*—Most remedies may be introduced in this form,



FIG. 106.—Ointment Syringe.

and in any requisite strength, and the purpose is thus fairly well served, when a slow alterative action is required. The best excipient is vaseline.

¹ Giving, as I advisedly do, such a limited number of substances applicable for our present purpose, I think it right nevertheless to mention the following list of medicinal agents for intra-uterine application, taken from Dr P. Munde's work on *Minor Gynaecology*:

1. *Cauteries.*—Mild: nitrate of silver, iodised phenol, carbolic acid, pyroigneous acid. Strong: nitric acid, chromic acid, acid nitrate of mercury, bromine, chloride of zinc, actual cautery.

2. *Astringents and Styptics.*—Sulphate of zinc or copper, alum, nitrate of silver, tannin, persulphate or perchloride of iron, tincture of iodine, hydrastis, eucalyptus resin, pinus canadensis.

3. *Alteratives.*—Iodine, iodoform, iodised phenol, galvanic current.

4. *Stimulants.*—Carbolic acid, galvanic current.

5. *Narcotics.*—Opium, belladonna, iodoform.

6. *Disinfectants.*—Carbolic and salicylic acid, thymol, permanganate of potash.

7. *Ergot.*—Ergot.

and with one drachm of this may be incorporated carbolic acid, gr. i. ad m., iodoform gr. v., tannin gr. x., phimb. iodid. gr. v., zinc sulpho-carbolatis gr. v., or other similar agents. A syringe with a long vulcanite nozzle (fig. 106) is suitable for this purpose, if the ointment is semi fluid.

(C.) *As Solid Substances.* Morsels of nitrate of silver, sulphate of zinc, or other powerful agents, may be introduced into the uterus by modifications of Lallemand's well-known *porte-caustique*, but the effect is so uncertain, often so severe, and so incapable of being localised at the desired points, that this method seems to me to possess no advantage over others of a more certain character. I have no experience of insufflation of solid substances, such as iodoform in powder, into the uterus, except in *post partum* septicæmia, but if such powders seemed desirable, I would prefer to introduce them adhering to an ordinary cotton-coated Playfair's probe well smeared with vaseline.

(D.) *As Injections.*—Nothing is more easy than to introduce a small vulcanite or metal nozzle into the uterus, and through it to inject the smallest quantity of the most attenuated solution, of any desired substance, into the uterine cavity. Previous dilatation of the cervix and the use of a double tube should, one would suppose, make absolutely sure that, however the uterus may contract under the stimulus, there would follow no forced entrance of any of the fluid into the narrow openings of the Fallopian canals, no shock to the system from suddenly dilating the uterus, and no peritonitis from either of these causes. Yet with all these precautions, intra-uterine injections have often proved fatal from the above causes, and in able hands. Certain as they are, therefore, to convey the remedy to all parts of the surface, I look upon them with the utmost suspicion, and would advise the young practitioner, at any rate, to have nothing to do with them in endometritis. I need hardly say that this condemnation in no way applies to the use of the full sized double catheter, with well dilated os and cervix uteri, for copious intra-uterine injections of hot or cold water, of antiseptic fluids, or of iron or iodine solutions, in the atonic hæmorrhages or foetid retentions of labour, abortion, or intra uterine tumours.

(E.) *By Painting or Swabbing the Uterine Mucous Lining.*—This is, and will, I believe, continue to be the most available mode of applying nearly all substances, alterative, astringent, antiseptic, or even corrosive, to the interior of the uterus, in ordinary gynecological practice. It fulfils all the necessary conditions, applying the remedy in any required strength to all parts of the endometrium, by means of common and easily-managed apparatus. A well-made Playfair's probe, and some good absorbent cotton-wool, and, most important of all, the acquired skill of applying the one to the other in sufficient bulk, are the sole requisites.

The cotton must be firmly twisted on to the applicator, so that there may be no risk of its slipping off, and yet its outer layers must remain loose enough to absorb fluid easily and freely, and all superabundant fluid must be removed. The cervix must be sufficiently patulous to allow of its passage, or must be dilated by bougies or by tent. The probe, more or less curved, is passed at once to the fundus uteri, and gently turned round so as to squeeze out the fluid, and apply it to the whole surface. Such applications of alterative substances may be made every three or four days, the solutions used being of the same strength as those for the cervix.

In very chronic cases, when the discharge of pus is excessive, where the uterus is heavy, and the wearing back-pain is constant, and especially when menorrhagia or metrorrhagia exist, it may be presumed that, as in obstinate cervical disease, the surface has become covered with thick sprouting granulations, necessitating the use of the curette or of strong acids. With such presumed conditions, it is always advisable to dilate the cervix fully, and to introduce the finger for the purpose of ascertaining the facts positively. Curetting can then be performed while the cervix is still patulous. It will be much more easy if the opening be wide, and free vent will also be given for the debris. An examination of this



FIG. 107. Attall's Intra-uterine Cannula

with the microscope will set aside any possible doubt as to the existence of malignant fungus of the body of the uterus.

The curette used

should be capable of being bent at will, yet strong enough in the handle to admit the use of a little pressure. I prefer a thin blunt wire (fig. 58), to a cutting edge, for intra-uterine work. The loop is passed to the fundus and then methodically drawn downwards, scraping all affected parts of the uterine wall successively until they give the impression of being quite smooth. The cotton wrapped probe must then be introduced, medicated with moderately strong carbolic or iodine solution, for the purpose of applying these substances to the raw surface, of preventing septicity, and of promoting expulsion of all debris. As a rule the uterus contracts freely, and aids in the latter object.

If escharotics are preferred, the instrument of Attall (fig. 107) is of great value. It is a kind of intra-uterine speculum, through which the probe, glass rod, or woollen skewer, bearing nitric acid, can be safely introduced into the uterine cavity. In severe chronic cases, such as described, but in these alone, its use is often followed by speedy improvement. The necessity for a sufficient amount of previous cervical

dilatation is obvious. Chronic acid or bromine may be used in a similar way. In the preference which I have thus shown for, and in the confidence which I have endeavoured to inculcate in, mild alterative local treatment of endo-metritis in contra-distinction to the more heroic, though, perhaps in some cases, ultimately necessary means, I am aware that I differ from many whose opinion I deeply respect. It is one of those points, however, in treating of which I should be unfaithful to my task if I did not insist on the results of my own experience. I take it for granted that the milder remedies suggested are faithfully used and not merely played with, and that the use of the stronger remedies is to be considered as justified by the fair trial of the milder, and not as a confession of previous error.

Chronic Corporeal Parenchymatous Inflammation.

The whole pathology of this subject is very obscure, for although we undoubtedly encounter acute metritis of the uterine parenchyma, the changes which are met with in the chronic form are, unless in the very rare instances of chronic abscess, not so evidently of inflammatory origin. They are of the nature of a hypertrophy of the connective tissue of the organ, as apart from its muscular elements, and it would be difficult to say how they differ from what we shall afterwards meet with in subinvolution of the uterus. It must be borne in mind, however, that the ultimate tendency of inflammation in most structures is towards connective tissue accumulation, as we see, for instance, in the so-called fibroid or cirrhotic degeneration of other organs. Clinically we do have a chronically hypertrophied condition of the uterine tissue, sometimes evidently commencing as acute inflammation, although more often not clearly traceable to this. It is moreover often associated with endo-metritis, although not infrequently free from such association. Leaving the further elucidation of its intimate nature to the pathologist, we shall treat of it as a clinical phenomenon and by far too common a one. The student should be familiar with the term "areolar hyperplasia," which many writers, following Thomas, use to describe the hypertrophic state characteristic of the disease.

The *causation* is to be found, in the majority of cases, in something interfering with recovery from labour or abortion. Thus a state of acute or sub-acute *post partum* inflammation may eventuate in the chronic condition. Endo-metritis may, by extension, or by mere irritation and hyperæmic tendency, lead to the parenchymatous enlargement. Subinvolution, if the two things be not pathologically almost one, may ultimately lead to, or be inseparable from, chronic metritis, and it is just at the time of involution that changes in the uterine connective tissue

are most liable to occur, sometimes by absorption, sometimes by deposit. Retention of *post-partum* products, lacerations of the cervix, and the habit of miscarriage, all tend to irritation and hyperæmia, and may all aid in producing chronic metritis. The same may be said of the pelvic inflammations or congestions so rife in morbid recovery from labour or miscarriage. These exciting pelvic causes exist, although less frequently, in the non-puerpera. The absolute neglect of endometritis, or its too early treatment by heroic remedies, may equally be credited with an occasional share in the etiology of the parenchymatous disease. Uterine displacements, especially flexions or prolapse, are most commonly associated with parenchymatous inflammation or hyperplasia, but they are effects of the disease quite as often as causes. The weight of the hypertrophy causes the displacement, but the displacement interferes with the circulation, and may cause or aggravate the chronic enlargement.

Symptoms.—I cannot say that, as regards symptomatology, I can name any well-marked symptom which distinguishes the parenchymatous from the mucous disease. The symptoms of pressure on the rectum, or bladder, or blood vessels, are more frequent in the former, but as often as not these are due mainly to resulting displacements. Increased size of the uterus, minus free purulent discharge, may be said to be the differentiating sign, as also the greater tendency to menorrhagia or slight metrorrhagia which is found in the parenchymatous affection, except when the endometritis is complicated with free granulations.

Diagnosis.—Owing to the enlargement of the body of the uterus, which is the main feature of chronic parenchymatous metritis, there is a possibility of mistakes in diagnosis, especially in those cases where the function of menstruation is in abeyance, or, as is much more commonly the case, excessive or irregular. The uterus may be thus moderately enlarged in early pregnancy, or when it is the subject of fibroid tumour, or polypus, or fundal cancer; and pelvic exudations of lymph or solidified blood (perimetritis or hæmatocele), may simulate or accompany the enlargement of chronic metritis. The possibility of pregnancy simulating or coexisting with chronic metritis must never be forgotten, and until this can be set aside, the use of the sound is, of course, forbidden. In early pregnancy it will seldom happen that some of its characteristic symptoms and signs are not present, sufficiently to make us at least suspend judgment for a time. The suspension of menstruation for one or more periods is, *per se*, prohibitory of the use of the sound, until time has been allowed to ascertain whether enlargement goes on at the normal rate. The state of the cervix characterising pregnancy, its softening, and apparent shortening, are apt to be doubtfully in evidence during its earliest months, and are often obscured by pre-existing cervical metritis. But a careful bi-manual examination will reveal sufficient of the anteversion

and anterior vaginal roof-stretching which exist in pregnancy, and will show that, instead of an equally enlarged and tender uterus, as in metritis, we have one which is broader antero-posteriorly, which can be felt clearly in the anterior vaginal fornix, which can also be felt *per rectum* as a comparatively soft bulging mass, and which is much less clear in outline to the fingers pressing downwards from the hypogastrium, than the solid thickening of metritis. It must be borne carefully in mind that some of the less certain symptoms of pregnancy—enlargement of the mammae, and even darkening of the areolae, nausea and vomiting, and signs of pelvic pressure on vessels or nerves—may all exist in chronic metritis.

A small fibroid or other growth of the uterus may for a time be mistaken for chronic metritis, but if the history of the case be carefully studied, and, pregnancy being set aside, if the sound be used to ascertain the character and contents of the uterine cavity, and if the symptoms of fibroid disease, afterwards to be described, be carefully borne in mind, mistake can only be temporary. The enlargement of metritis preserves the normal contour of the uterus. It never flattens out and expands the cervix uteri as we shall see that polypus or fibroid often does, and hæmorrhage of a metrorrhagic rather than a menorrhagic character is much more common in the case of uterine tumour. The presence of peri-uterine exudations is most clearly ascertained by the history of previous inflammation, with high temperatures, and by the fact that the uterus is firmly fixed in its place, while not infrequently that place is an abnormal one (*see* Chap. XIX.).

The *treatment* of parenchymatous inflammation of the body will frequently require, and for similar reasons, the use of some of those remedies which we have already mentioned in connection with endometritis. If endometritis itself be present in any degree it will meet with our earliest attention, as being very frequently the forerunner and the exciting and continuing cause of the parenchymatous affection. But, independently of this, there are certain remedial measures in common. Thus, the frequent use of the glycerine plug and the hot-water injection are equally valuable here as in endometritis. But there are remedies which act much more specially on the hypertrophied condition of parenchymatous disease. Few cases of long continuance are not benefited by, and many can hardly be benefited without, the use of *absorbent drugs*. Among these, iodine in the shape of iodide of potassium, or occasionally iodide of iron, holds the foremost place. At any time, if it will agree with the stomach, this remedy may be followed by fairly evident results; but the more closely the affection is connected with the post-puerperal period, the more likely is it to prove beneficial. I think it has, of late years, been too much neglected in favour of the less effectual absorbents, the bromides; but a combina-

tion of the two is often desirable, especially when there is hæmorrhage and reason to suppose that this is partly due to ovarian complication. The famous waters of Kreuznach owe their reputation to a belief in the action of their iodine and bromine constituents. So will it be, I believe, with Woodhall in Lincolnshire when further developed as a spa. Other waters, by their alkaline or tonic properties, may be beneficial in vaginitis and endometritis, but these two are almost unique in their action as absorbents. I have a firm belief also in the action of mercury, judiciously used, in cases of old-standing metritis. Very small doses (gr. $\frac{1}{2}$ and less) of the bichloride, given with quinine or other tonics, will produce remarkable softening and lessening in many cases which cannot be traced to syphilitic origin. Attempts have been made to produce absorbent action by the introduction of iodine into the cavity of the uterus. In the absence of distinct endo-metritis, I would strongly advise abstinence from what will probably only succeed in setting it up.

Another most important indication is to *diminish the local congestion*, which plays so important a part in keeping up all the discomforts of metritis, and which, if not the cause of it, at any rate prevents the curative action of remedies. Emmet is so well aware of this prominent and ruling phenomenon, that all he has to say about metritis in his valuable work on gynecology is, "*see Congestive Hypertrophy.*"

The diminution of local congestion is brought about by the glycerine or hot water plans of treatment already referred to, and these are aided by the occasional use of saline or other not over strong aperients. Frequent recourse to the recumbent position, with the pelvis raised, will assist in this, and very important indications in this direction are secured by treatment of a mechanical nature. The correct treatment, by appropriate pessaries, of flexions, or versions, or prolapse of the uterus, when they are found to coexist, as cause or effect, with chronic metritis, is the foremost of these indications. I advise the young practitioner not to be too anxious to ascertain, as it is often impossible to do, whether displacements are due to inflammatory hypertrophy, or inflammatory hypertrophy is due to displacement, before he sets to work to remedy both. The great point is to use the least irritating form of uterine support at first, and to watch its effects most carefully until assured that it relieves, or at least does not aggravate, pain and discomfort. The means to achieve this end are treated of in Chapter XII. But even if there be no version or flexion of the uterus, and no very evident tendency to prolapse, it will be found that many, or most cases, are benefited by a certain amount of artificial raising of the uterus, or by the prevention of downward pressure. The exact level at which relief is found can only be ascertained by experience in the individual case, but certainly it is a fact that a uterus lifted up too high by a mechanical support will develop painful

symptoms very similar to one which is dragging upon its supports. The clothing of Englishwomen is, for the most part, so constituted as to press downwards the abdominal and pelvic viscera. The use of braces in some form or of a "petticoat bodice" without circular tapes is therefore indicated here. Elastic abdominal bandages are much in vogue for the purpose of diminishing downward pressure on the pelvis. The majority of those sold in the shops simply increase it by compressing the abdomen. To be of any use they must be curved in front, so as to lift up the abdominal contents by getting below them. Mere chronic inflammatory enlargement of the uterus seldom raises the organ sufficiently out of the pelvis to enable the belt to affect it otherwise than in a downward direction; and its use should, therefore, in this affection, be confined to very stout women with pendulous abdomen, or to those cases where the heavy uterus seems to press much forwards upon the bladder and symphysis pubes. Some form of pessary will generally be found useful, for a time at least. The Hodge or lever pessary (fig. 165), the most valuable of all for backward or even downwards displacements of the uterus, is available here if accurately fitted, and if the congestion and tenderness of neighbouring parts will bear its pressure. But in uncomplicated chronic corporeal metritis, uncomplicated, that is, by flexion or version of the uterus,—a soft watch-spring elastic pessary (fig. 108) will generally answer the purpose best; its size will determine the height at which it will fix the uterine descent, and must be altered until found effective in the prevention of discomfort. When the cervix is also affected it will prolapse through the ring of the pessary, and may become more swollen, and even be strangled thereby. In such cases the perforated diaphragm (fig. 109) is a necessary adjunct to the ring. The chief requisite in either case is to see that the upper or posterior rim of the pessary is introduced behind the cervix uteri; it may be left in other ways to find its own level.

Other remedies than those calculated directly to promote absorption or to diminish congestion are available, although probably it is largely by their indirect influence in the same way that they act beneficially.

Scarification of the cervix, leeches being inconvenient in many ways, is



FIG. 108. — Watch-spring Ring Pessary.



FIG. 109. — Watch-spring Ring Pessary, with perforated India-rubber Diaphragm.

strongly recommended by many as tending, when frequently employed, to diminish hyperemia of the whole organ. It is difficult to see how it can be of use in those cases where, above all things, a healthy state of nutrition is required, but in subacute exacerbations it may occasionally be used with advantage. If any distinctly enlarged cervical follicles are visible, the scarificator should take them in its course. I have no experience of scarification of the body of the uterus itself, except by the curette in endo-metritis.

Ergot, by its specific action on the uterus, tends to develop the force, and bring into play the action of its muscular element. It thus exerts a sort of astringent action on the parenchyma, which is of special value when this chronic condition is accompanied by passive hæmorrhage, either at or between the normal periods. The mere hardening of the tissues thus produced should be beneficial also by expelling any serous infiltration accompanying passive congestion; and, although this may be very theoretical, is it not possible that the bracing of the muscular tissue may aid by its pressure in promoting absorption of undue connective tissue deposit? Twenty or thirty drops of the liquid extract may be given three or four times a day for lengthened periods, and the dose increased whenever menstruation is excessive or inter-menstrual hæmorrhage is present. In a few cases the feeling of contraction is felt so painfully that it is desirable to withdraw or diminish this remedy; either a special idiosyncrasy of the patient, or the presence of subacute inflammation in some part of the uterus may account for this painful action.

Counter-irritation has occasionally a beneficial effect on the symptoms of corporal metritis, though more frequently any such effect is doubtful or evanescent. Iodine freely painted on the lower part of the abdomen, small blisters to the groins, and similar procedures too often only serve to amuse or occupy the patient, but in tedious and painful cases their use is permissible if we are content with small results.

Sedatives are hardly ever advisable, in the form of opium exhibited by the mouth, in so chronic an ailment, but when the patient is more than usually distressed, a suppository or pessary of morphia (gr. $\frac{1}{2}$) and ext. belladonna (gr. ii.) is the best way in which relief can be afforded.

When disease of the cervix accompanies that of the body, the local treatment of the former may largely influence the latter. Thus iodine or other remedies applied to the cervix may act as absorbents on the whole organ, and the amputation of redundant portions of the diseased cervix has often been followed by absorption of excessive corporal hypertrophy. I am not prepared, however, to recommend, as has been done, the removal of portions of a healthy cervix, in the hope that absorption will follow in the diseased body of the uterus. In this affection, as in all other chronic local disease, the promotion of a healthy state of

system is a *sine quâ non*. The patient should have as much open-air exercise as possible without bodily fatigue. Exercise must be very carefully prescribed, and every renewal of discomfort (real, not imaginary) must be the signal for a revised order on the subject. A sea voyage, when it can be carried out with the comforts of a floating hotel, is often most beneficial. The use of tonic bathing, either in the sea or in the brine baths of Pyrmont, Kissingen, or Droitwich, has often seemed to me a most efficient adjunct to the other hygienic means of treatment in purely chronic cases, and the judicious use, under proper medical sanction, of the tepid douche, the sitz bath, and other hydrotherapeutic appliances, is not without value in similar cases. Physiological rest of the uterus, as far as sexual relation is concerned, should be advised in all cases requiring treatment. The Weir Mitchell system is occasionally of use in old cases of metritis, but its influence is so general, rather than local, and it bears so much more on conditions of nervous or mental depression, that I have thought it advisable to speak of it separately elsewhere (*see* Chap. IV.). Some further observations on the treatment of this affection will be found at p. 253.

Chronic Cervical Parenchymatous Metritis.

Pathologically this must be viewed in a similar light to the analogous affection of the body. Commencing as a more or less acute form of inflammation, and creeping imperceptibly onwards, it tends to hypertrophy of fibrous or connective tissue, and leads to enlargement of the organ, either retaining its ordinary shape or altering it by attacking one portion more than another. At its commencement it is nearly always associated with inflammatory affection of the body, or with endometritis of the cervix. Most frequently the latter state continues with it, and we have both thickening and hardening of the parenchyma, and abrasion and suppuration of the mucous membrane, but occasionally the state of hypertrophy or "areolar hyperplasia" of the cervix remains alone to be dealt with.

Symptoms and Diagnosis.—When at all excessive, it produces the usual discomforts of chronic uterine disease already described. A digital examination will reveal the altered shape and size of the cervix, the os being nearly always patulous, and the only affection for which it is likely to be mistaken is the induration of malignant disease. The chief points of difference—they will be again referred to—are the free mobility of the uterus, which remains in metritis, although it may be limited by coexisting pelvic inflammation, but which is early lost in cancer; the more intense hardness of cancer, which seems to involve the mucous cover

ing as well; the frequent presence of the ordinary appearances of cervical endo-metritis along with the hypertrophic thickening of the parenchyma, or on the contrary the deep indurated ulcer of cancer; and the much greater tendency in the latter affection to severe pain and hæmorrhage, though these are often wanting, especially the pain, till a late stage. In the early stages of some forms of cancerous disease, when the kind of induration is our only test, the most perfect *tactus eruditus* may be occasionally deceived for a time, but a careful watching of the case and its progress will soon remove the difficulty, and if in a doubtful case the induration is removable by amputation, this will at once afford the best chance to the patient, and furnish the means of microscopical diagnosis.

Treatment.—The judicious treatment of accompanying endo-metritis, the use of absorbents, medicinal and local, as just directed, and the support of the uterus so as to diminish its tendency to congestion, furnish our means of treatment in ordinary cases. But the enlargement of the cervix is sometimes so great, so distressing by pressure downwards, or by tending to produce prolapse of the whole organ, that special surgical means of relief are not infrequently called for. Instead of mentioning these immediately, I propose, in accordance with our plan, to dismiss now the subject of inflammation of the uterus as such, and to deal with uterine conditions which may be considered as accompaniments or results. This will lead us to speak next of certain chronic affections of the cervix uteri. A certain amount of repetition will be unavoidable.

CHAPTER IX.

DISEASES OF THE UTERUS—*continued.* Ulcerations and Abrasions, Hypertrophy, and Lacerations of the Cervix Uteri. Chronic Hypertrophy and Subinvolution of the Body or Cervix.

IN this chapter we shall require constantly to refer to the previous one for the explanation of the origin of many or most of the abnormal conditions described, yet some of the affections to be mentioned may be independent of any recognisable inflammatory origin. With an eye solely to clinical usefulness, we shall now discuss them from the standpoint of local troubles chiefly amenable to local treatment, surgical or otherwise.

Ulcerations (?) or Abrasions of the Cervix Uteri (*Non-malignant*).

As soon as the speculum was introduced into practice, it became evident that the mucous lining and covering of the cervix uteri were liable to changes which were most striking to the eye, and which were so easily seen by any one endowed with a very moderate amount of skill, that undoubtedly an epidemic of "ulcer of the womb," with its special treatment, set in, and I fear it can hardly be said to have yet subsided. The idea of ulceration, i.e., destruction of tissue, has held its ground along with, and is no doubt partly due to, the unfortunate nomenclature first given. Pathologists are, I think, now almost entirely agreed that the majority of these red, often tender and bleeding, though frequently symptomless, "ulcers," are simply the evidences of hyperæmia, with perhaps slight exfoliation of the outer epithelial cells, due to chronic congestion or inflammation of the uterine mucous membrane; to this, the simplest form (*Frontispiece*, No. 2), the term *abrasion* or *erosion* is applicable. In some cases the redness is simply due to the fact that the columnar epithelium of the deeper parts of the cervix has grown down into the place of the squamous form, which is found near the os externum, and that its unwonted situation and hyperæmic accompaniments give to the surface an appearance of erosion. In a more advanced stage there is considerably greater thickening and apparent rawness of the part, due to

granulations, such as are seen on other mucous surfaces, and evidently due also to the presence of numerous villi. By many these villi are still supposed to be enlargements of the normal subjacent papillae, denuded of their epithelial covering, but the most recent investigations tend to show that they are mere formations on the surface, and that they are still covered with epithelium (Galabin, *Obst. Trans.*, vol. xxii. p. 156). In no sense, therefore, are they ulcers, but simply unhealthy sproutings. It is this form which we have described in the last chapter as the *granular state* of the cervix (Frontispiece, No. 4). In all these manifestations of chronic endo-metritis we have shown that the essentials of treatment consist mainly in attention to constitutional states of the body, in prevention of pelvic congestion, in the application of mild alterative local remedies as occasional adjuvants, and, in a few cases, in the application of powerful escharotics, or destruction of the surface by the knife or curette. When the ducts of the subjacent glands become obliterated, we have small cysts formed, which by their prominence give



FIG. 110. Fissured Cervix, with Granular Mucous Membrane (Schroeder).

rise to little projections, often white and purulent—the so-called *follicular* form of erosion or granulation (Frontispiece, No. 3). The nature of the affection is the same, although its appearance is thus somewhat altered, but the occluded glands add to the irritation and chronicity, and recovery may be hastened by scarifying at least the more promi-

nent of them. Where the os uteri is sodden and patulous, from the continual purulent discharges of endo-metritis, and still more in cases where tearing (fig. 110), especially bilateral tearing, of the cervix exists, eversion of the inflamed os uteri takes place, and we have *ectropion* to a greater or less degree (Frontispiece, Nos. 4, 6). This condition, when covering a parenchyma also the subject of chronic inflammation or induration (Frontispiece, No. 5), adds materially to the difficulty of cure, and, as we shall see just now, may demand surgical measures for its treatment. When an erosion or granular inflammation has passed away, there is often, though not always, a certain amount of bluish discoloration left for a considerable time, but unless there has been something more than this, or unless powerful escharotics have been used, the surface does not exhibit a cicatricial appearance. The student should bear in mind that a considerable erosion or even *ectropion* may be hidden by the tubular speculum pressing together the sides of the cervix, so that if this be used for local applications, it is well occasionally to employ a duck-bill with its necessary accompaniments, or an expanding speculum.

such as Cusco's or Reid's. In ninety-nine out of every hundred cases of "ulceration" of the cervix, the above are the conditions met with.

It cannot be denied, however, that although this is the true nature of these affections, occasionally we may have, from friction, or from over-causticing, or even as a mere result of inflammation, spots of true ulceration, not very dissimilar in appearance, but resisting treatment longer and causing some cicatricial contraction.

I have already spoken of the possibility of confounding these erosions and granulations, when situated on a hardened base, with the early stages of cancer. The deep ragged ulcer of cancer, with its hard edges and foul discharge, should never be mistaken when fairly developed, but it is the incipient induration of cancer, without or with only the slightest commencement of ulceration, and before the uterus is fixed by infiltration, that may sometimes be a cause of anxious doubt, and which should then almost always lead to surgical treatment, as if the more serious affection were present.

True chancreous ulcers are seldom found on the surface of the cervix, and their diagnosis is most difficult in the ab-



FIG. 111.—Prolapse Uteri, with Ulceration (Thomas).

sence of information as to the cause. The edges are sharp and precipitous and their surfaces deep, quite unlike erosion, but not so unlike some forms of cancer. There is one form of true ulceration also to which the cervix uteri, in common with the surrounding vagina, is liable, viz., that which takes place in prolapse of the uterus when it appears externally. It is then exposed to the external atmosphere, to constant irritating leucorrhœa, and to friction against the limbs or clothing, while from its very position it is in a state of constant passive congestion. Every beginner will soon become familiar in hospital practice with this form of ulceration (fig. 111). It is usually found at the lower extremity of the prolapse, but sometimes on portions of the vagina which are still unextruded. Large patches occur, and they almost always have the appearance of an indo-

lent ulcer with thick sodden edges, rounded and not sharp. These impart a false appearance of depth, and give to the uninitiated a somewhat appalling idea of an old prolapse. Fortunately their cure is easy enough on one condition, viz., that the uterus be replaced and carefully retained in its normal position. No applications are of any use without this, though if there be more than ordinary irritability of the ulcer, a little zinc or bismuth ointment will serve temporarily to allay it. The uterus once replaced and retained in its proper position, however, passive congestion and its attendant low vitality are removed and the ulceration proceeds to get well of itself, often in an incredibly short time. I have seen an ulcer as large as a crown piece, and *apparently* a quarter of an inch in depth, which had disappeared so completely in three weeks that a careful inspection was necessary to trace its former outline. In fact, although I have followed the prevailing fashion in describing these as true ulcers, the frequent rapidity of their disappearance without cicatricial remains, would lead to the belief that, in these cases also, the term is sometimes a misnomer. Free injection into the replaced vagina of carbolic water, hot, tepid, or cold, according to circumstances, is all that is really necessary, and that only for the sake of cleanliness and antisepticity.

Hypertrophy of the Cervix.

We are still on the border-land of metritis, seeing that the great majority of cases of enlarged cervix uteri are due to its influence. But enlargement may occur, as far as we know, without inflammation, from sub-involution, for instance, (although in this case the occurrence of previous inflammation is merely "not proven") or from original developmental causes, where inflammation seems to be out of the question. We speak here of the cervix uteri as it is commonly understood in clinical practice, viz., as that portion of the uterus which projects into the vagina. Between the vaginal reflexion and the true body of the uterus, or os internum, there is still a portion of cervical tissue—the supra-vaginal portion—which is liable to become hypertrophied, either alone or along with a similar condition of the uterine body, and which plays an important part in prolapsus uteri and other affections, which we shall by and by consider. It is, however, from its surroundings, little amenable to the surgical treatment which we fearlessly apply to the intra-vaginal portion.

Non-inflammatory enlargement of the intra-vaginal cervix is met with in the form of long conical cervix, to which I have already referred (p. 198) in connection with the stenosis which generally accompanies it. The stenosis is mainly confined to the os externum, and, as

far as it and its consequent dysmenorrhœa are concerned, a small backwards incision, kept open for a time by the passage of a bougie, generally suffices to afford relief. But in extreme cases the length of the cervix—for it is rarely enlarged much in circumference—may become a source of infinite trouble. It produces all the symptoms which are more often the result of prolapse of the whole organ—constant dragging and feeling of bearing down, difficulty of locomotion, occasional pressure on the bladder or rectum, and vaginal catarrh or sub-acute vaginitis. It may even protrude externally as a pseudo-uterine prolapse, and become ulcerated as has just been described. In such a case prolapsus uteri will always be suspected, and is by non-experts often diagnosed. But an examination will show that the finger can pass high into the vagina, and sweep around the projecting cervix without pushing it materially upwards. A body not unlike a turgid cow's test will thus be made out, and the fundus uteri will be found at or nearly at its normal height on bi-manual examination. Combined manipulation of the extreme cervix and fundus will show their continuity, and the passage of the sound will show a much increased total uterine length; while, if there is still any doubt, a recto-abdominal and recto-vaginal examination will show how much of this increased length is above and how much below the summit of the vagina. For this non-inflammatory hypertrophy, with its accompanying discomforts, there is only one remedy—amputation. Absorbent drugs or applications have no effect.

To accomplish this object great ingenuity has been employed in the invention of methods, showing at any rate some consensus of opinion as to its necessity and advisability. Yet I feel bound to quote the opinion of Emmet on the opposite side:—"I advance the statement," he says, "without qualification, that this operation, as at present applied, is to a great extent a malpractice, and is attended by more evil consequences than any other procedure now resorted to in this branch of surgery. In fact, I am satisfied from experience that removal of the cervix is never called for except in some forms of malignant disease" (*op. cit.* p. 484). I can hardly resist the temptation to place alongside of this quotation another from the same eminent surgical authority, in which (p. 145) he says:—"Under the guise of surgery, the uterus has been subjected to a degree of malpractice which would not be tolerated in any other organ of the body." This is, fortunately, not the dictum of a physician of the old school, and is one of the most pregnant sentences in Emmet's admirable surgical work. Although, however, it is the case that, in inflammatory hypertrophy, where the cervix has been torn, operations of a plastic kind are often preferable to, and more scientific than, amputation, yet I believe the latter to be necessary in some of those

cases in which elongation is congenital and not connected with inflammatory conditions.

Pallen (*Brit. Med. Jour.*, 1883, i. 852) describes what he terms "wrong implantation" of the vagina on the cervix, so that a long intra-vaginal cervix with almost normal total length of the uterus would mean high implantation of the vagina upon it, and not enlarged cervix. In such cases he recommends the removal of a circular band of the mucous covering of the upper part of the cervix, and the lifting up of the cervix by stitching together the borders of the circular wound thus made. In fig. 112, the surface, A B C D, is pared raw, and then C D is stitched up to A B, so as to sling up the cervix in its own shortened mucous covering. I have no personal knowledge of the proceeding.

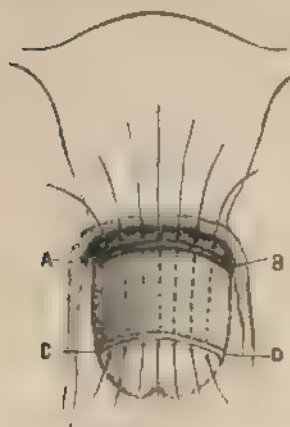


FIG. 112.—Pallen's Operation for Elongated Cervix Uteri.

Amputation can be performed in two ways, by *knife* or by *ceraseur*. There

are four things necessary to be avoided :

- 1st. The recurrence of severe or fatal hæmorrhage.
- 2nd. Amputating too high, so as to risk opening into the peritoneum.
- 3rd. Leaving a stump which will not cicatrize within a reasonable period ; and
- 4th. Allowing the cervical canal to become permanently obliterated or stenosed.

Hæmorrhage is prevented by the use of the *ceraseur*, but it can always be arrested by styptics and the subsequent use of the vaginal plug. This may seriously interfere, however, with the success of some of the more complicated procedures with the knife. Amputation too high can in any case be avoided by passing a uterine sound, and so raising the whole organ to its full height, but without further pressure than is necessary for this. A careful recto-vaginal examination while the cervix is thus held will show clearly how much of it is distinctly intra-vaginal, and, the sound being withdrawn, a portion of this alone is acted on. A raw stump is left by the *ceraseur* and by simple excision with the knife or *sissors*, but I have found this prone to heal shortly, especially if free injections of antiseptic fluids are perseveringly used ; in the same way the raw surface left by the removal of fibroid polypi heals rapidly. Various attempts have been made, which will be mentioned immediately, to effect union by first intention, by stitching

together the cut mucous edges, and thus covering the stump at once. Contraction of the canal is more liable to occur with the ecraseur, although it can never be depended on not to arise, unless the case be very carefully watched. The early and occasional introduction of a bougie, or the wearing of a glass stem (fig. 99) for some time after the operation, must be used in all cases.

Amputation of the Cervix by Ecraseur.—For amputation with the ecraseur the galvano-cautery wire is infinitely preferable to all other instruments, the only objections being its expense, its want of portability, and the liability of all forms of battery to go wrong just when wanted. The last objection is the most valid.

The first thing to do is freely to expose the cervix with the duck-bill. A vulcanite duck-bill of precisely the same form as the metallic instrument is useful for such purposes, and it is not liable to injure the electric current by a chance contact with the wire. The platinum-loop is now slipped on to the cervix to the requisite height, and tightened, while well under view and touch, until it just slightly depresses the surface, or a slight gutter may be cut in the mucous membrane. No retention of the wire by metallic needles is permissible, and as platinum will bear only a very limited strain, the thickest wire should be used, which an actual trial has shown that the battery is strong enough to bring to a white heat. There is no objection to a bone needle for the purpose of fixing the wire, provided that it can be pushed through the cervix without excessive dragging downwards. Contact with the battery is now made, care being taken to remove the fingers from the neighbourhood of the platinum loop. No traction must be made on the ecraseur, otherwise the cervix may be simply denuded of its mucous covering, but the tip of the cervix must be held steady by an assistant with a hook or vulsellum, while he carefully keeps it out of the way of the electric instrument. With the first sign of electric-heat action, a slight frizzling sound, or an equally slight appearance of smoke,—the operator commences to turn very gently the screw which tightens the wire-loop. No force must be used in this way, but the tightening must follow, not lead, the cutting action of the hot wire. Suddenly it will be found that all resistance to the screw ceases, and the instrument and the cervix must be then rapidly removed together, while the person in charge of the battery is warned simultaneously to break off the connection. If a non-electric ecraseur must be used, the ordinary chain instruments are too clumsy for this purpose; even those which have a comparatively fine chain, and are curved in the shank, are inapplicable, unless the cervix is so low that without any force it protrudes through the vulva. The wire ecraseur is better suited for the present object. Its wire can be bent at right angles to the instrument, and applied very

much as the platinum wire of the electric instrument. A curved needle, or a straight barelip pin if the cervix is very low, may be passed through the cervix at a point below that at which amputation is safe or desirable, and left there after the wire has been made to surround the cervix just above it.

Amputation of the Cervix by Knife or Scissors.—We may set aside the use of scissors for this purpose. For many vaginal or uterine operations they have advantages over the knife, which are none the less great because they commend their use especially to the inexperienced operator, but the density and extent of the tissue to be divided in complete amputation place the scissors, however skilfully curved on the flat, or the edge, at a disadvantage. If the cervix can be well drawn down, and if we have ascertained beyond doubt how much may safely be removed, the circular sweep of a good sharp bistoury will do what is wanted. Hemorrhage will be free, and will probably require the use of the *tampon*, besides the application of a styptic, but it can be diminished, or almost prevented, by slipping a stout india-rubber ring just above the point at which amputation is to be made. This must be removed slowly after the amputation by snipping through it gradually with scissors.

Marion Sims has complicated this plan by stitching the vaginal mucous covering of the cervical stump to the vaginal wall; the rubber ring, if used, must of course be removed first. I fail to see the advantage of this plan. It may assist somewhat in keeping open the cervical canal, but can never obviate the necessity for the use of other means for that purpose. In a case where there was even a suspicion of malignancy of the cervical enlargement it would obviously be inadvisable.

Hegar advocates the use of a plan which seems more likely to promote healing of the stump by first intention, viz., uniting by several stitches the edges of the mucous membrane which covers, and of that which lines, the cervix. The intervening raw surface is thus furnished at once with a mucous covering. Goodell, after considerable experience of this plan, states that union and primary healing take place "more or less."

A still more complex but very efficient form of amputation, introduced by Marekwald and modified by A. R. Simpson, consists in first passing three wire sutures through the cervix at the required height, then splitting the cervix with scissors or knife up to the same height, exposing the sutures at their point of perforation. Each of them is then hooked down through the split cervix and its loop is cut, so that we have each half, anterior and posterior, included in three wires, with their ends hanging down. A good portion of each artificially made lip of the cervix is now cut off, and the stitches are tightened and twisted. Other stitches may be introduced, when necessary to secure adaptation of the mucous edges.

This operation is described more fully at page 259 of Hart and Barbour's *Manual of Gynecology*. It resembles in many ways the procedure required for the remedy of tears of the cervix.

To the general practitioner I have no hesitation in saying, that if he meet with an undoubted case of elongated cervix of congenital origin, which is causing distressing symptoms by its pressure, and which is the only apparent cause of dysmenorrhœa or sterility, he is justified in amputating, and that he will succeed best by the use of the galvanocautery *ceraseur*. His chief care must be to keep well within the vaginal portion, to avoid stripping or scalping the cervix instead of cutting it right through, and to carefully keep open the cervical canal during the process of healing.

Inflammatory Hypertrophy of the Intra-vaginal Cervix.—Very considerable enlargement of the cervix may be met with as a result of chronic metritis, or, as far as we can disentangle the two affections, of sub-involution; and long after any accompanying endo-metritis may have passed away, this, by its weight, may tend to cause very great discomfort, and may lead to prolapse of the whole organ. Such enlargement varies much in shape, but rarely resembles the conical cervix of which we have just been speaking. If equal in all parts it presents a shorter and much thicker body for observation and treatment, the os externum being usually large and patulous. More often, however, the anterior lip, or the posterior, or some irregular portion, is much more hypertrophied than the rest, and this even in women who have borne no children, and in whom there is no splitting of the cervix from previous delivery. That complication I speak of farther on. Given such a cervix, with its accompanying discomforts,—for it may exist with hardly any,—what is to be advised? I would say, first, carefully inquire whether there is any further chance of doing good by internal or local alterative drugs. They will almost certainly have been tested to the fullest extent. Next, try what the use of pessaries, as afterwards recommended for uterine prolapse, will do to relieve all discomfort, and to afford a fresh chance, by preventing continual congestion, for alterative remedies and hygiene to cure the affection; and thirdly, if these measures fail, or have been previously tried, or if the enlargement is so great and the discomfort so severe that they are unlikely to be of service, removal of the offending part, wholly or partially, must be undertaken.

If the enlargement is tolerably equal all round, and if it distinctly projects into the vagina, when tested as above directed for the congenital form, I have nothing to add to what I have said above as to the various methods of amputation. Fritsch proposes in such cases to remove two large wedge-shaped pieces, one from the front and the other from the back of the cervix, and to unite the edges of each gap separately. The

result is very similar to that obtained by Marekwald's somewhat more complicated proceeding. But if one portion, say the anterior lip, is much more hypertrophied than the rest, it will frequently suffice to remove that portion alone. It is just in such cases that the suspicion of commencing cancer sometimes arises, and this would at once decide the question of removal. It will depend a good deal on the surgical proclivities and experiences of the practitioner which plan of removal he will adopt. The shape of the hypertrophied part will also help to decide. If it can be included, without fear of slipping, in the galvanic *ecraseur* wire, that will probably be used. If a harelip pin or curved needle can be passed through it, so as to retain the common wire *ecraseur* in place till it fairly bites, that may be the resource, but if it presents, as it often does, a thick mass tapering rapidly downwards, the best plan will be to pass through it, with a curved needle, two, three, or more wires, to slip over them and if the firm india-rubber ring, while with knife or scissors the portion below the wires is removed. They are then tightened and twisted so as to coaptate the raw edges, and the elastic ring is subsequently removed. The wire stitches in this and all similar proceedings should not be removed until at least a week after the operation, and may often remain twice as long. As a result of this abscission of the most redundant portion of the hypertrophied cervix, we frequently see the subsequent absorption of the remainder taking place very rapidly, and what is more, it seems to have a result of the same kind on hypertrophy of the body. It is therefore desirable not only for the primary object in view but also for the secondary one thus indicated. I have seen so much mischief produced by attempts to destroy hypertrophied portions of cervix by *potassa fusa*, in the hope that it would also lead to absorption of chronic corporeal hypertrophy, that I can use only one word to express my advice on the matter—Don't.

Laceration of the Cervix Uteri.

We have next to discuss a subject that has occupied much attention during the last few years. When I first commenced practice, next to the treatment of "ulcer of the womb" by the constant application of nitrate of silver and other caustics, the great achievement of those who aimed at distinction in gynecology was slitting up the cervix uteri for dysmenorrhœa and sterility, by the various hysterotomies which were then coming into vogue. Many unnecessary operations were performed, and a practice which has its legitimate sphere was brought into much discredit.

It is only some twenty years since Emmet first performed his opera-

tion for the cure of lacerated cervix, about thirteen since he published (in 1869) his first paper on the subject, and not more than ten, since, by a second paper (*Amer. Jour. of Obst.*, Nov. 1874), he succeeded in fully drawing the attention of the profession generally to its merits; and already there are symptoms, especially among our American brethren, of a mania for cervix stitching. If only a tithe of the cases reported on the other side of the Atlantic are genuine and successful, they speak volumes in favour of at any rate the boldness and skill of the American practitioner. Henry Bennett, at the International Medical Congress held in London in 1881, pointed out some of the ludicrous aspects of this revolution in practice, but such questions are not to be finally decided in this way. The cervix uteri does require division or amputation, under fitting circumstances, and its lacerations do also require to be remedied by stitching, with a similar limitation, Emmet's wise caveat with regard to uterine surgery in general, quoted above (p. 233), being always borne in mind. If there is a place for ridicule, it should be brought to bear upon those phases of gynaecology which seem to presume that "sitting-up" or "stitching-up," or otherwise surgically treating at all, is the natural fate of the genital organs of women—or upon that curious tendency which every now and again manifests itself to assign all female troubles to one prominent lesion—to uterine inflammations, displacements, lacerations, or other abnormal conditions.

It is a mistake to suppose that Emmet was the first to recognise the bearing of lacerations of the cervix on many diseases of that organ. I remember Sir James Simpson, in 1855, at the Edinburgh Maternity Hospital, telling me that a torn cervix was a most common cause of aggravated cervical disease, and he spoke so as to give me the impression that this was a commonly acknowledged fact, though undoubtedly it was not. Henry Bennett also called attention to this condition (*Uterine Inflammation*, 2nd ed., 1849, p. 25). But the duck-bill speculum and the silver suture were then not in use, and uterine surgery in its recent developments was therefore unknown, so that lacerations were considered as irremediable aggravations rather than as curable causes of uterine disease. To Emmet undoubtedly belongs the merit of clearly pointing out the numerous effects that flow from laceration of the cervix, and of describing a practical operation for its cure.

The operation has been termed *hystero-trachelorrhaphy*, but it is just a little odd to find so competent an authority on the matter as Emmet himself saying that—"It would be but human nature for the uninitiated" (*query*, patient or practitioner?) "to dread the severity of an operation so termed." The horrors both of female disease and of its surgical treatment have been not a little enhanced in this direction of

late years by some of Emmet's compatriots, and their German imitators or models.

Causation. That laceration is due, in most cases, to the effects of labour at full term is undoubted, but it would appear to be as yet undecided whether long and tedious or over-rapid labours are the most destructive to the cervical tissues. Too prolonged labour, however, probably gives rise to the greatest number of cases, although the too early use of the forceps, with undilatable os uteri, cannot be held guiltless. Not a few cases were traced by Emmet to abortions or premature delivery, and especially, as might be expected, in cases where this had been brought about artificially. He found, after very careful collection of statistics, that over 32 per cent. of all fruitful women coming under his care in private practice, suffered from laceration. My own more limited experience

would lead me to consider this estimate as not very much too high,

an appalling prospect indeed, if we are to conclude that all or most of these patients require a difficult surgical operation. The sting which anesthetics were supposed to have taken from the curse "in sorrow shalt thou conceive," would be restored with a vengeance, and not a slight addition would



FIG. 113.—Stellar Laceration of the Cervix Uteri (Emmet).

be made to the "sweat of the brow" predicted for the other sex. The fate of the perineum would prepare us for operative measures on a sufficiently extensive scale, but surely nothing approaching to this.

Forms.—Laceration may occur in any direction at the time of delivery, but unless carefully sought for, on account of hæmorrhage, it is then nearly always overlooked; indeed, by the finger alone, as any student may satisfy himself, it is most difficult to ascertain the outline of the cervix at all, immediately after delivery. The anterior lip is most apt to suffer, and that chiefly towards its left side. The pressure of the long diameter of the head, in its first and most common position, explains that. But antero-posterior lacerations are more apt to heal during convalescence, with little or no permanent depression, and lateral tears are more often the cause of permanent trouble. We may have every variety of form—

stellar (fig. 113), unilateral (fig. 114), bilateral, or otherwise. I omit here those cases of cervico-vaginal rupture which leave permanent records in the form of fistular communications with the bladder or rectum.

Results.—As regards the results of rupture of the cervix, we may dismiss them, as encountered at the time of occurrence, in few words. The chief result is hæmorrhage, and it is necessary for the obstetrician to bear this in mind, as he must also remember the corresponding affection of the perineum, when severe primary *post-partum* hæmorrhage occurs in spite of well-contracted uterus and complete expulsion of the secundines. I have never known a case where the ordinary treatment of *post-partum* hæmorrhage has not sufficed to arrest hæmorrhage from the cervix alone, but a small sponge, soaked in tincture of iodine, four times diluted, and pressed against the torn cervix by a forceps, has in one or two cases been of immediate service. I can imagine a case, however, where, as

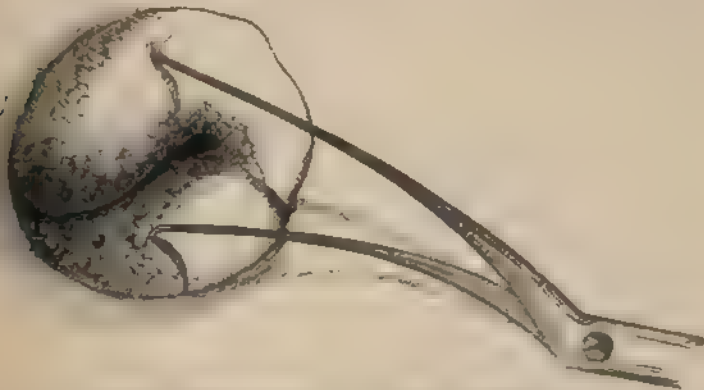


FIG. 114.—Unilateral Tear of the Cervix Uteri (Emmet).

has been done by Pallen, the primary stitching of the parts might be necessary. It would, under the circumstances, be infinitely more difficult than the primary operation on the perineum, though its details will be simple enough to those who understand the operation required by laceration as a cause of subsequent trouble. The consequences of torn cervix, as a chronic affection, are of much greater importance. There can be no possible doubt that it acts, both as a cause of chronic cervical endo-metritis, and as an agent which retards or prevents the cure of that affection by ordinary means. If deep, it leads almost necessarily to a state of ectropion, to the eversion of the mucous membrane of the cervical canal; and the friction of this everted surface against the vaginal walls, its contact with the vaginal secretions, and its liability to injury in the marital relation, and on all great exertion,—all these circumstances tend to render it a matter for very careful consideration whether, by operative

means, it can be eliminated from the morbid chain of cause and effect. Parenchymatous enlargement of the cervix surely follows in its wake, as an extension of inflammatory mischief from surface to substance; and this enlargement increases the ectropion, and thereby spreads the superficial inflammation. Where we have had cervical tearing we have also an increased tendency to those peri-uterine inflammations which so often depend on septic absorption from torn surfaces; and the result is an organ less fitted to contend with its own local difficulties. Sub-involution, or chronic parenchymatous inflammation of the uterine body, adds to the general weight and congestion, which diminish the chances of curing the cervical condition. Menorrhagia, dysmenorrhœa, abundant leucorrhœa, and, of course, all the usual dependent train of symptoms,—back-ache, hysteria, and so forth,—are thus in a sense traceable to torn cervix, and the fashion for the moment is to trace them to this source almost alone. But it should be clearly understood that old lacerations of great depth, and in all directions, may exist without a single morbid symptom, and without involving any necessity for surgical interference. I desire to make myself personally responsible for this statement of fact. On the very day of writing this I have had occasion to examine a lady of sixty-two years of age,—the mother of six children, and one who has been known to me for over twenty years as free from any trace or suspicion of uterine disease,—on account of a little hæmorrhage, which turned out to be due to a small herpetic ulcer of the vulva; and I found a cervix split completely across transversely and as deeply as possible, and with three radiating tears, two anteriorly and one posteriorly. I introduced a duck-bill speculum and widely separated the cervical lips, and found not a trace of redness in any corner of the fissures.

That acquired sterility will often follow in the wake of this affection, when complicated with some of the preceding symptoms, and that the removal of such symptoms will occasionally be followed by pregnancy, does not seem to require the amount of discussion and proof that has been bestowed upon it. It seems to be also pretty certain that the cervix uteri, thus everted and exposed to irritation, is more liable to the invasion of epithelioma, though I know not in what degree, nor are there any accurate statistics to prove the fact; as a result of the affection, or of its concomitants, we may also have, in addition to the effects already mentioned, various reflected neuroses, neuralgia of the uterus, with or without dyspareunia, and greater liability to menstrual disorders or uterine displacements, as well as tendency to abortion or tedious labour when pregnancy occurs.

Treatment.—It is therefore of great importance to decide three questions—(1) When is an operation, demanding considerable skill in the practitioner, and some fortitude in the patient, called for? (2) How can this

be avoided by prophylactic or other means? And (3) if once decided on, what is the best mode of its performance? I take the second question first, and in reply I have no hesitation in saying that Emmet, the originator of the operation, has himself provided us with the surest means of preventive treatment, as far as regards operation, for these lesions. To those who will consult his observations (*op. cit.*, p. 624) on the management of a case of vaginal fistula previous to operation, or will refer to my remarks on the subject (p. 129), or who have noticed how these fistulae improve, and sometimes spontaneously heal, under the hot-water treatment by injection, I can affirm that a like result will often follow if the plan be employed early in laceration of the cervix uteri. If recognised at the time of delivery, the use of copious, tepid, antiseptic injections should be made from the beginning, and, indeed, for other reasons, this is advisable in all cases of delivery. In every case it would be well if a careful vaginal examination were made within three, or at most four, weeks after confinement. If this were universally done, many other conditions requiring early management would be discovered in time, and certainly this condition of laceration of the cervix would not give the trouble in after-life which it undoubtedly often does. It can by that time be diagnosed with certainty by the finger, and its extent can then be ascertained by the duck-bill speculum. The *hot-water* treatment now comes into play. The attendant must be shown how to manage the syringe and the overflow stream, with the patient on her back and the pelvis well raised, and an injection must then be given at least night and morning for a few days, and once daily or nightly for two or three weeks, even after the patient feels able to go about freely. I have tried warm injections in this way for a considerable period, but have only been acquainted with the value of hot water (105° and upwards) since the publication of Emmet's first edition. My somewhat limited experience of its use since then, in these cases of recent rupture of the cervix, has, however, convinced me that we possess here a means of promoting union of the torn surfaces to a sufficient practical extent, without permitting their invasion by granular sprouting, which renders permanent adhesion very difficult or perhaps impossible. It is too much, however, to hope that the plan of invariable examination at the right time will ever be fully carried out, especially among the poorer classes, though certainly a male patient who had ever endured anything corresponding to the pangs of labour would "jump at" the idea of an investigation "to see that all was right again," and his adviser would probably insist upon it.

Supposing, however, that no means have been taken during the puerperal month, or within a short subsequent period, to promote adhesion of a torn cervix, or to ensure that such fissures of the cervical

rim as may remain are covered with healthy mucous tissue, it is still possible, in my opinion, to bring about the same result, at a much later period, without operative interference, if the instructions given above for the management of cervical erosion are fairly carried out, especially the negative ones as to strong caustics. If, treating the unhealthy surface by powerful caustics or escharotics at this stage, we destroy all the superficial tissue and render it incapable of recovering its normal condition, or of extending to the parts which are torn, there will be nothing for it, laceration or no laceration, but destruction, by the knife or other means, of the unhealthy structures which have taken its place. If the less heroic plan of mild alterative local applications, combined with the means I have pointed out for removing pelvic congestion, for lifting up the uterus to a moderate extent, so as to avoid uterine congestion, and for improving the general health by alterative and tonic treatment, be followed out, the torn cervix, torn in a moderate degree at any rate, may retard but will not prevent complete recovery.

Operative Interference—When not called for.—Our first question. When is operative interference required for the cure of cervical fissures? is thus partially answered; I mean an operation for the paring of the torn surfaces and their union by stitches. I would say that an operation of this kind is not called for—

1. When the laceration, though deep, but strictly confined to the cervix, is covered with healthy mucous tissue.
2. When the condition of the parts is recent and such that there is a fair prospect of cure by the simple means above indicated.
3. When there is evidence of surrounding pelvic inflammation, or inflammation of the body of the uterus such as may account for the persistence of cervical disease, or which would almost inevitably be aggravated by a formidable surgical operation on the cervix.

Operative Interference—When called for.—After this negative statement we are bound to state when, in our opinion, paring of the torn edges of a lacerated cervix and reparation of the tears by stitching is called for. I would, with my present experience, limit this to cases where—

1. The torn surfaces are covered by thick granulations, which have resisted the simple means advised for the cure of cervical endo-metritis, and where evidently nothing but the curette or powerful escharotics will avail.
2. Where the lacerations, and their consequent results, had produced considerable ectropion of the cervical canal, or great alteration in shape of the cervix itself, such as would probably require ablation of some portion, and
3. Not as Emmet puts it "when the woman suffers from neuralgia,"

but when neuralgia or nervous phenomena of severe character can be traced by exclusion to nothing else than uterine origin, and to the possible involvement of uterine nerves in the cicatricial tissue of the cervix. In this case, and in this alone, are we warranted in operating on a laceration covered with healthy tissue, and unaccompanied by great hypertrophic distortion of the cervix.¹

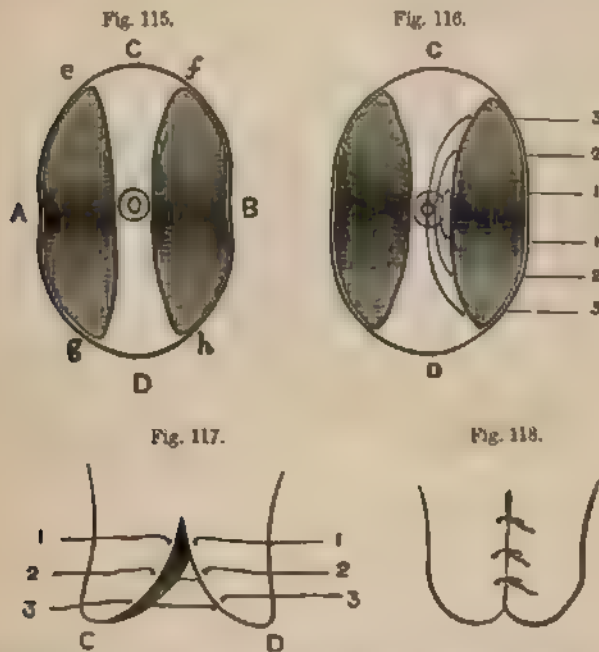
Method of Operation.—It remains to describe the simplest method of operating for the condition of lacerated cervix. In the first place, Emmet lays as much stress on the value of long-continued preparative treatment as he does in the case of an operation for vesico-vaginal fistula. Without such preparative treatment the slightest provocation, he says, will suffice to bring back all the former symptoms. I can well believe it, for the so-called "preparatory" treatment consists in following out precisely those maxims which we have just advised for the cure of ordinary erosions and enlargements of the cervix, with or without tearing, and with or without surrounding inflammatory affections of the uterine body, ovaries, broad ligaments, cellular tissue, or peritoneum. Hot water injections, a suitable pessary, glycerine plugs, puncturing enlarged follicular cysts, and the application of iodine or astringents to the eroded surfaces, —these sum up the whole matter. When the preparatory treatment has been fully carried out to the extent proposed, viz., to the removal of all tenderness, it might be well to make quite sure that the further operation is required at all. Opinions differ much as to the difficulty of the operation and the time for its performance. Pallen considers the operation difficult of performance (*Brit. Med. Jour.*, May 21, 1881). Jonathan Hutchinson (*Holmes's System of Surgery*, iii. 420) says:—"The operation is a simple one; the uterus is drawn down, the edges of the fissure are pared, and sutures inserted." Emmet refuses to operate as long as there are any traces of pelvic cellulitis. Goodell considers persistent pelvic cellulitis as a ground for operation. Martin of Berlin operates during its existence, and without preparatory means, as Simon of Heidelberg does in vaginal fistulae.

¹ As this operation is undoubtedly entitled (according to the practice, which will ere long render Greek or Latin mere child's play to the medical student, in comparison with the biographical language inflicted upon him) to be termed "Emmet's operation," it is only right to allow the originator to define the necessary conditions for its performance in his own words. He says (*op. cit.*, p. 467): "I would state that in every instance where the condition (lacerated cervix) is evident, and where enlargement of the uterus still remains, or where the woman suffers from neuralgia, I consider an operation necessary, notwithstanding the parts may have completely healed." I cannot accept this definition of the operative indications. I estimate that about fifteen operations a week, for the one affection, would be the result of my doing so at the present time. The acquirement of a special reputation in the matter would doubtless increase the number for a time, until, like sitting up the cervix, the practice became universal, and was by its abuse discredited.

If the question of operation be decided in the affirmative, the patient is placed in the left lateral position, the cervix is exposed in the usual way by the duck-bill speculum, and is drawn down by hook or vulsellum. A copious vaginal injection of very hot water, given just before the operation, will greatly tend to prevent hæmorrhage, but if the tissues are at all soft, it is better to surround the base of the cervix with a thick wire drawn tight by means of a small *ecraseur* or *tourniquet*, which is left in position. The surfaces of the laceration are now to be freely pared by *acissors* or knife, in such a way that the raw edges on opposite sides will freely unite when placed together. Each side of the tear must be denuded separately, and any convexity or bulging it may have acquired must be thoroughly pared flat. In troublesome or complicated cases it may be advisable to operate on successive portions at different times. Considering the varieties that exist in the direction of these tears, it is impossible to portray intelligibly to the ordinary medical reader the appearance of their denuded surfaces. But to one accustomed to plastic operations, and no other should attempt this, it is sufficient to recognise fully the depth and the length of the laceration, and the shape of the organ desired to be restored. Before operation, the surfaces must be hooked together as far as possible, so as to assume the desired shape, and thus give a clear idea of how much redundant tissue will require to be shaved off to admit of proper juxtaposition. Small minor diverging fissures may be included in the surface swept clear in the walls of the main one.

A description of the mode of treatment of a simple bilateral tear must suffice, and for hints as to the management of more complicated fissures, the reader is referred to Emmet's work. In figs. 115, 116, 117, and 118, A C B and A D B represent diagrammatically the opposite surfaces of a complete tear, A B being their angle of union, in the centre of which is O, the lumen of the cervical canal. A C B and A D B have to be pared and vivified, and stitched together in such a way as to permanently adhere, while leaving a free passage outwards from O to the surface at C D. A strip O e f (fig. 115) on one flap, and a similar strip O g h on the other, will have to be left unpared, otherwise the canal of the cervix uteri will be closed, and these strips of unpared tissue must be wider at the lower end of the cervix, to allow for the greater shrinking which takes place in that part of the repaired organ. The parts to be freshened will therefore correspond with the shaded portions of fig. 115, and when placed in position, e will adhere to g and f to h, leaving a wide and patent canal. The stitching, still shown in a purely diagrammatic form in fig. 116, is accomplished thus. For the sake of clearness only three stitches, Nos. 1, 2, and 3 are shown, and these only on one side, but it may be necessary to use four, five, or more, at intervals of $\frac{1}{2}$ to $\frac{1}{4}$ of an inch.

The effect of placing C and D in apposition, and then tightening these stitches, commencing with the uppermost, cannot fail to be apparent, but figs. 117 and 118 will probably make it even more so. The denudation of the surface is best performed by sharp scissors, commencing at the apex or lowest part, and removing each side of each flap, if possible, in one piece. Short, curved needles are the most convenient for introducing the wire stitches, and it is essential to have a good holder, such as that of Hagedorn (fig. 41). If the parts are very hard, it may be necessary to use edged needles. No. 26 wire is generally the most suitable. The



FIGS. 115, 116, 117, 118.—Four figures illustrating diagrammatically the steps of Emmet's Operation for the Repair of the Lacerated Cervix Uteri. The letters and figures refer to the text.

stitches, when twisted, are cut off about half an inch from the cervix, and the ends are turned down parallel to its length, so as to cause no irritation of surrounding parts. They may be removed from the seventh to the tenth day, the upper one first, so that, if adhesion be not complete, the lower ones may be left *in situ*. Fig. 119 shows the denuded surfaces, after Emmet.

According to Mundé, the operation is almost painless, except as regards the introduction of the stitches, and though he deprecates the practice in ordinary cases, he speaks pretty confidently of the possibility of oper-

ating without anaesthesia at his "office" or consulting rooms, and sending the patient home by car to pursue her usual avocations, and to return for the removal of the stitches in a week. Should this hint be largely taken up, I fear that the occurrence of severe and even fatal pelvic inflammation or secondary hæmorrhage will soon add to the suspicion with which this operation is even now regarded by many of our foremost gynaecologists.

One further precaution after the operation should be mentioned. If retroversion has been present before the operation, it will probably return when the patient begins to move about, and there will thus be caused a strain upon the young cicatrix, which it will probably be unable to stand. A Hodge pessary should therefore be inserted as

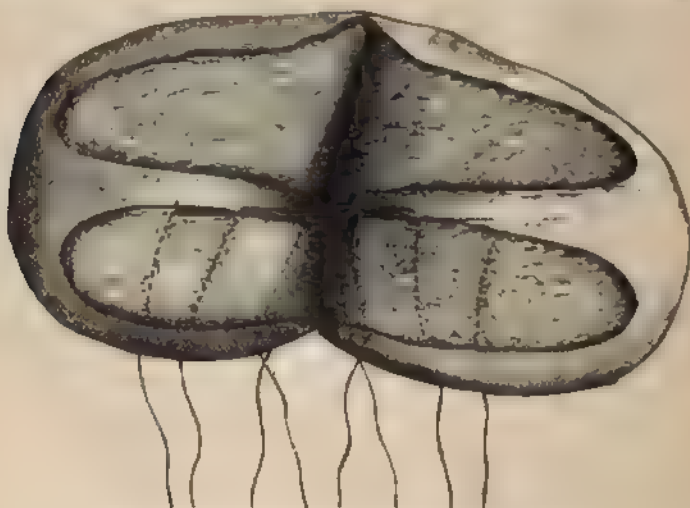


FIG. 119.—Lacerated Cervix after denudation (Emmet).

early as possible, and the uterus kept in an anteverted position. Emmet lays great stress upon this, and very properly, and I would further supplement the advice by recommending the practitioner who has successfully performed "hystero-trachelorrhaphy," to dismiss from his mind the notion of having achieved a "cure-all," and to remember that every single symptom attributed to the lesion under consideration may exist in its absence, and may remain or return in spite of its temporary remedial effect.

I am indebted to my colleague, Dr W. J. Sinclair (of the Manchester Southern Hospital), who has had some experience in this operation, for the following statements:—

1. The operation is more difficult of performance than descriptions of

it might indicate, and should not be undertaken without some previous experience of plastic operations in parts more easily reached.

2. A uterine tourniquet of any kind is an inconvenience. In most cases some bleeding is an advantage, improving the condition of the tissues. When the hæmorrhage is excessive, if the denudation of the upper end of the laceration be quickly completed, and the uppermost suture be at once introduced and twisted tight, the amount of bleeding will be sufficiently moderated.

3. Elaborate preparation of the patient appears to be unnecessary. Operations on a uterus fixed by the condition of the surrounding tissues, or in case of great hypertrophy, are followed by perfectly satisfactory results, the uterus becoming movable and less tender, and diminishing in size.

4. When there is much hypertrophy of the cervix, it is difficult to bring the outer edges of the denuded surfaces into perfect contact without cutting away a large amount of tissue or throwing great strain upon the sutures. In one such case an excellent result was obtained by the use of small quilled sutures to bring together the deeper parts and superficial interrupted sutures for the vaginal edges.

5. In case of laceration of both sides, it is better to perform two operations. The double operation is a very formidable proceeding. The hæmorrhage is less under control. It is difficult to properly shape the future canal, and to stitch without occluding it. After a successful operation on one side, the condition of the cervix so improves as to make the second operation comparatively trifling.

6. Partial failure will ensue unless great care is taken with the lower end of the fissure which is destined to complete the ring of the external os, in analogy with the operation for hare-lip.

7. The sutures should be left ten days at least; the only failure observed was owing to their too early removal.

8. During the introduction of the sutures the uterine sound may be attended in the canal by an assistant, or it may be passed repeatedly during the operation, to ensure that the canal is sufficiently wide.

9. Improvement in the patient's condition may come more slowly than is generally expected, and the operation must often be looked upon as merely a step in the course of treatment of a uterine disease.

Some of these observations, it will be seen, are antagonistic to the teaching of Emmet. Some have a very pregnant meaning to those who can read between the lines. Not being able to speak myself *ex cathedra*, I dare not endorse them. Time must be allowed to settle many points, both in the estimation and in the execution of the operation.

General Uterine Hypertrophic Enlargement.

Enlargement of the whole uterus may be due to a variety of causes—to the presence of intra-uterine polypi, to fibroid growths, to malignant disease, or other causes; but this would seem to be the most fitting place to mention that chronic condition of enlargement which is due, sometimes to chronic corporeal metritis, sometimes to sub-involution, and which is variously described under these two terms, or under the terms hypertrophy or hyperplasia. The pathology of this condition is not so clearly made out that we can generally attempt to differentiate between its forms, except in the way of assigning inflammation or abnormal recovery from pregnancy as presumptively predominating causes. In the sequel of both we have an addition to the fibrous or connective tissue elements of the organ, rather than to the muscular. When pregnancy has not pre-existed, we can only look upon this as the fibrous degeneration which modern pathology has shown to follow on chronic inflammation in so many other situations, and when pregnancy has preceded, and when inflammation has not been demonstrable in any acute form, we can only say that there is no sure ground for contradicting those who agree with Edis that it is "much more reasonable to look upon this condition as depending upon arrest of involution of the puerperal uterus than to regard it as the termination of a latent, undemonstrative, acute inflammation, the symptoms of which were so obscure as not even to have been observed." Time will doubtless solve the problem, and I cannot but think that one common factor will be shown to predominate in all these cases.

Caution.—Various causes would seem to conduce to this final hypertrophic result. In the unmarried, inflammation of the mucous lining (endometritis) is a frequent precursor, although this affection is certainly less common than in the married. Menstrual troubles, especially those forms of dysmenorrhœa which lead to frequent engorgement of the uterus, or to obstructive dysmenorrhœa, seem also to play a part. Unfruitful coition also is often clearly recognisable as a cause. In those who are too fruitful, who rapidly bear children, and still more in those who have frequent miscarriages, there is a special proclivity to chronic uterine enlargement, and the same result seems to follow on too prolonged lactation, which can seldom be carried on beyond nine months without deteriorating the systemic forces of the mother. After confinement the causes are apparently very numerous, but may be summed up in those which interfere with healthy nutrition of the tissues, or those which lead to hyperæmia of the pelvic organs. All departures from the state of general health, such as great mental depression, or diathetic disease, the occurrence of anæmia from hæmorrhage or otherwise, may be placed in the former

category; and irritation of the uterus by retained clots or secretions, by neglected tears of the cervix, or even by fœtid discharges—displacements of the uterus from too early exertion after labour, and engorgement of the pelvis from cardiac or other visceral disease, may be placed in the latter. The want of the healthy uterine stimulus afforded by normal and moderate lactation is often, and I think fairly, assigned as a further predisposing cause. After abortion most of these causes come into play in an even greater degree, and the unpreparedness of the uterus for the physiological processes of parturition fully accounts for this.

We may thus summarise the causes of chronic uterine hypertrophy as—

1. Chronic inflammation of the uterus itself or of the adjacent parts.
2. Sub-involution after labour or abortion, from—
 - (a) Impaired nutritive powers.
 - (b) Hyperæmia or congestion.
 - (c) The want of the contractile stimulus afforded by lactation.
 - (d) Retained products of conception.
 - (e) Physiological unpreparedness for delivery.
3. Over-frequent labours or abortions.
4. Excessive lactation.
5. Uterine engorgement, from—
 - (a) Frequent or unfruitful coitus.
 - (b) Menstrual troubles, especially obstructive dysmenorrhœa.
 - (c) All forms of pelvic congestion.

Symptoms.—Whatever the causation, the increase in its bulk gives rise to a tendency of the uterus to fall lower than usual in the pelvis, and increases the tenderness and weight of the organ, and this is apparent rather on bi-manual examination than on the passage of the sound—the bulk and thickness rather than the length of the cavity being increased, though that also may be in excess of the normal to a moderate degree. To the increased weight are due a sense of fulness or bearing-down, with symptoms of pressure on the bladder or rectum, or of dragging pain in the region of the ovaries or broad ligaments. Menorrhagia is seldom absent, and is often excessive and wasting, adding to the other sources of impaired nutrition, and there is often some tendency to inter-menstrual discharge. These hæmorrhages, together with the accompanying pain, often lead to the suspicion of even more grave organic disease. Displacement of the uterus backwards (retroversion or retroflexion) is a very constant sequel of the affection, adding to the discomfort and increasing the congestion of the organ; or anterior displacement may predominate. Not infrequently we have that lax state of the supports which permits of alternate backward or forward

displacement, or of prolapse. In addition to the other symptoms, we have, in many instances, sympathetic enlargement of the breasts and darkening of the areolæ, with nausea and vomiting, and other nervous sympathies which may lead to a suspicion of early pregnancy.

Diagnosis.—The state under consideration is most apt to be mistaken for early pregnancy, or for a fibroid tumour, and more rarely for cancer of the fundus uteri. A careful examination of the menstrual functions, and some patience, are required to avoid the first mistake in differentiation, and our chief diagnostic physical signs will be found in the presence or absence of the softened cervix of pregnancy, and still more in the shape assumed by the uterus, and ascertainable by bi-manual examination. In hypertrophic enlargement the uterus is enlarged equally, and in its later stages, at any rate, the substance is firm and hard. In pregnancy, on the other hand, there is distinct bulging of the anterior wall of the uterus, and the substance is softer and more indistinct to the touch. Also, if actual contraction of the uterine muscular tissue, while under examination, could be made out, the strongest evidence would be afforded in favour of pregnancy. It is seldom if ever felt under other circumstances.

The existence of a small fibroid tumour can generally be differentiated by dilatation of the cervix and exploration of the interior of the uterus, and by the history of the case, but in many instances the diagnosis is for a time very difficult, and may have to be left in doubt till further growth of the fibro-myomatous affection or diminution of the hypertrophic enlargement helps to clear it up. The existence of any decided irregularity of the surface of the uterus would point to the presence of fibroid tumours.

Cancer of the body of the uterus only is comparatively a rare affection. Its history is one of short duration, of severe and localised pain, and of violent hæmorrhage and fætid discharges, but in cases of doubt the diagnosis can only be arrived at by dilating the cervix sufficiently to allow of the passage of a blunt curette, and by a careful microscopic examination of any scrapings which can be thus removed. Sarcoma will be more fully alluded to when speaking of fibroid tumours, or of the affection itself.

Before referring to the treatment called for by this condition of connective tissue hypertrophy, or hyperplasia of the body of the uterus, I should mention the fact, now recognised by all pathologists, that that portion of the cervix uteri which lies above the insertion of the vagina, and which to the finger alone would appear to be a portion of the body, is often affected by hypertrophy, either alone, or along with the intra-vaginal cervix, or with the body. Much ingenuity has been shown in devising nomenclature for such localisations of the one pathological state,

but I think sufficient is said for all practical purposes at present, if I call attention to the fact that the uterus may appear to be very low in the vagina, in fact completely prolapsed, without much apparent elongation of the cervix, and yet with retention of the fundus, at or about its normal height (fig. 120), and that where this occurs it is frequently due to elongation of the supra-vaginal portion of the cervix. This will be again referred to when speaking of the diagnosis and treatment of prolapsus uteri.

The treatment of this affection can never be undertaken without its being accompanied by a careful attention to other disorders which may stand in relation to it as causes or as effects, not infrequently as both. Thus the endo-metritis which is so frequent a concomitant demands those local or general remedies described above. The same remark applies to chronic inflammation of the pelvic structures or its resulting exudations (Chap. XIX.). Displacements of the uterus must be treated by efficient supports, and the treatment must be accompanied *pari passu* with that of the hypertrophic state. Even though the latter may have been the sole cause of the former, it is aggravated and kept up by its continuance. The general health must be attended to, and all means observed which are otherwise required for the improvement of the nutritive processes and the removal of anæmia. Among these, iron is strongly denounced as almost a poison by Tait and some other writers, when there is any tendency to hæmorrhages, though quinine, strychnine, cod-liver oil, and the like are approved of. I cannot join in the condemnation of iron, if given in small



FIG. 120.—Hypertrophy of the Supra-Vaginal Portion of the Cervix Uteri (Schneider). Pseudo-prolapse.

and digestible doses. The constitutional treatment must specially include attention to the free action of the bowels by small doses of salines. This not only promotes digestion, but diminishes pelvic congestion. If the functions of the heart or liver are disordered, they also demand appropriate treatment, such disorders being fertile sources of passive congestion. Among *prophylactic* means, we must note the judicious management of labour or abortion, including prolonged recumbency without too much restraint, the encouragement of natural suckling, and the free use of ergot during the first puerperal weeks. This is, I believe, a necessity with all those atonic women who form the majority of our town population. I have already referred to the advisability of an

examination of the uterus a few weeks after the occurrence even of natural labour, to ascertain the existence or otherwise of torn cervix, lateral pelvic exudations, &c. Another important prophylaxis is found in the prevention of prolonged standing, in all women employed as shopkeepers, or otherwise subject to it, and especially at the menstrual periods. Physiological rest of the organs is also a factor of great importance. No woman should, if possible, become impregnated for two or three months after labour, and still more after miscarriage, and if any symptoms of subinvolution have been developed the period should be still more prolonged.

Among curative measures, the most important, in all cases which succeed to labour or miscarriage, is to make perfectly certain whether any of the products of conception have been retained, and if so, to remove them. Small portions of placental structure or of membrane may remain long adherent, and whether there is or has been any foetid discharge or not, are always to be suspected when metrorrhagia or even menorrhagia is persistent. In such cases the os may be patulous enough to allow the passage of a finger into the uterine cavity, while the fundus is depressed by the other hand, and an anæsthetic greatly assists the manipulation. When this is impossible, a tupelo tent, and a second, or a third if necessary, must be inserted. For the removal of such adherent portions the finger alone may suffice, but may require to be supplemented by a blunt wire curette (fig. 58), and the removal must be followed by an injection of carbolic water into the uterus through a wide double catheter. If much engorgement or subacute inflammation seems to exist, the use of the glycerine plugs and the hot-water vaginal douche is now of service, and lessening of all the symptoms will speedily follow. I seldom or never now use scarification of the cervix in such cases unless it is otherwise indicated. Among internal remedies, ergot is, *par excellence*, the one on which reliance is to be placed, and it should be given freely; 30 or 40 minims of the liquid extract, or 3 grains of Bonjean's ergotine three or four times daily, at least. Whether it acts mainly by producing contraction of the vessels, and thus diminishing hyperæmia, or by astringing the whole uterus through its muscular tissue, I do not pretend to say, but its action in producing temporary and permanent diminution in size is often undoubted. Strychnia and quinine, both as tonics, and in reference to their specific action on the uterus, may be given at the same time, and if the heart and circulation generally are feeble, digitalis or convallaria may be combined with advantage. The salts of potash have been highly lauded by Brintz as having a specific action on uterine involution, and provided the salt is soluble and not repugnant to the digestive organs, it is, according to him, immaterial which is given—the citrate, chlorate, or bromide. The latter of these fulfils the further object of allaying ovarian or pelvic

uneasiness, and, holding the action of the potash as still *sub judice*, should be preferred. Whether iodine or mercury in its mildest forms have an absorbent action in true sub-involution or hypertrophy, is much doubted by many, if not most, writers. My own experience leads me to believe that in some cases, and I cannot pretend to differentiate them from others, I have occasionally seen rapid benefit from both of these agents. The free and frequent painting of the cervix and upper end of the vagina with tincture of iodine may be resorted to, and seems occasionally to produce an absorbent action on the body of the organ, but, in the absence of speedy results, the practitioner must avoid dallying thus with his patient's time and purse. The treatment of lacerated cervix has been fully dwelt on, and both that and amputation of redundant portions are undoubtedly often followed by diminution in size of the enlarged fundus. The treatment of these affections of the uterine body by destruction of the cervix, or a portion of it, by *potassa fusa*, is, in my opinion, simply barbarous. If any good result is ever produced, it is at the expense of future suffering.

There is no use, however, in disguising the fact that when the body of the uterus is once chronically hypertrophied, it is apt to be so for life, or till long after the menopause. Its attendant symptoms, or rather its attendant accidents, may be prevented by judicious care while its existence remains, but these attendant consequences are so numerous, especially in the form of uterine displacements, that no efforts, harmless in themselves, should be spared to diminish it, while the too frequent futility of all treatment should lead us to abstain from measures which may do serious mischief and which have no assured success. I cannot, however, in this affection, endorse the opinion of Gookell, who says—"I have come to the conclusion that he is the most successful gynaecologist who is intelligently the most plucky, and that, no matter how severe or how mild the treatment of uterine disorders, the percentage of accidents will be about the same, and that a very low one."

CHAPTER X.

DISEASES OF THE UTERUS—continued. Fibro-myomata or Fibroid Tumours
Uterine Polypi. Fibro-cystic Tumours.

Fibro-myomata or Fibroid Tumours.

ALTHOUGH these growths are excessively common, we know almost absolutely nothing of the *causes* which give rise to them. We do know that they arise, for the most part, if not universally, during the period of sexual fertility (Oerum of Copenhagen, in 1002 autopsies, found no case under twenty years of age; 1 in 150 under thirty; and 12 per cent. after forty), that before puberty they are almost unknown, and that after the menopause they very frequently shrink, or at any rate cease to grow; that they are most common in those who have borne children, and that they are not traceable to previous inflammation, to traumatic causes, or, as far as we can tell, to endemic influences, although the negro race exhibits a special liability to them. Hence we deduce the belief, probably a correct one, that they are associated as accidental redundancies with those changes of tissue which are perpetually recurring, from month to month, in the uterus.

In size they may vary from that of a pea to that of the largest melon. The uterus may contain but one, or it may contain an enormous number of them (fig. 121). Physically, they vary considerably, from a pearly-white colour and dense hardness, to a reddish-grey aspect and much softer consistency. These two extremes of colour and consistence are partly due to a greater or less vascularity, and partly to the predominance of the fibrous or muscular element. The less vascular and the more fibrous, the whiter and firmer are these growths. They are generally attached but loosely to the surrounding muscular tissues, except at one or two points, and the loose tissue around them forms a sort of capsule. There is, however, no true capsular membrane; and when the muscular element prevails, there may be little (if any) boundary between tumour and uterine wall. Their vascular connection with the uterus is generally limited, and often seems to be almost entirely severed; but the uterine wall in their neighbourhood is often very rich in large vessels; so much so, that the uterine *souffle* is often heard over them as distinctly

as it is over the pregnant uterus, a phenomenon also occasionally due to their own vascularity (see below). Their microscopic structure is that of combined fibroma and myoma (of connective tissue and unstriated muscular fibre); the former generally, but by no means always, predominating. These structures are grouped together in many bundles and distinct whorls, which are often apparent enough to the naked eye; and on a section being made there is frequently a rough appearance, due to the bulging outwards of the whorls. Whatever nerves are traceable into their structure are usually little sensitive to pain. There are often loose interspaces between the bundles of tissue, and these are liable to serous infiltration, causing variations in the apparent size and hardness of the same tumour at different times. According to Klob, they are liable to lymphangiectasia, or

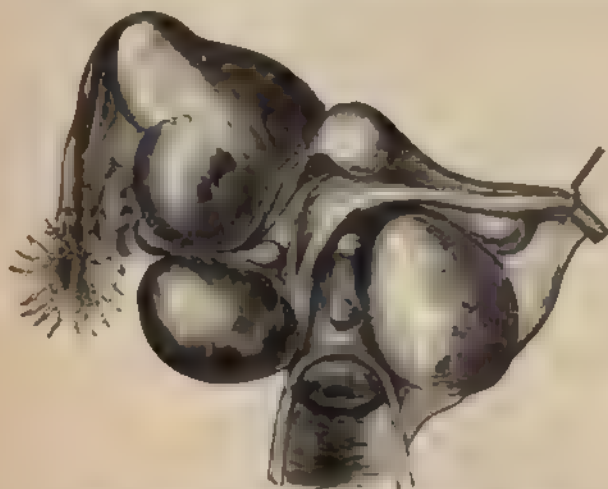


FIG. 121. -Multiple Fibroids of the Uterus (Boivin et Dugès).

dilatation of their lymphatic channels; and Virchow describes a cavernous type, where the blood-vessels are largely developed. This form is also accompanied by the uterine or falsely-named placental *souffle*. These features, and others to be afterwards mentioned, account for the occasional occurrence of large pseudo-cysts (fig. 122) (see "Fibro-cystic Tumours"), which alter the physical characters of the growths very much, and add greatly to the difficulty of their diagnosis. Occasionally, though rarely, abscess may form in the substance of large fibroids, giving rise to agonising pain. I aspirated one such tumour several times, and finally got rid of this complication, while leaving the tumour otherwise untouched.

These growths may alter or degenerate in other ways. Occasionally complete involution or disappearance takes place; this will be more

particularly mentioned in relation to treatment. Fatty degeneration frequently occurs, and is generally associated with arrest of growth, or even disappearance; and Kleinwachter expresses a belief that, in multiple fibro-myomata, many of the centres have a definite career of development impressed upon them from the first. Calcification is a rare sequel, but has led to attempts at cure by the administration of the chloride of calcium. Naturally calcified fibroids have been expelled as

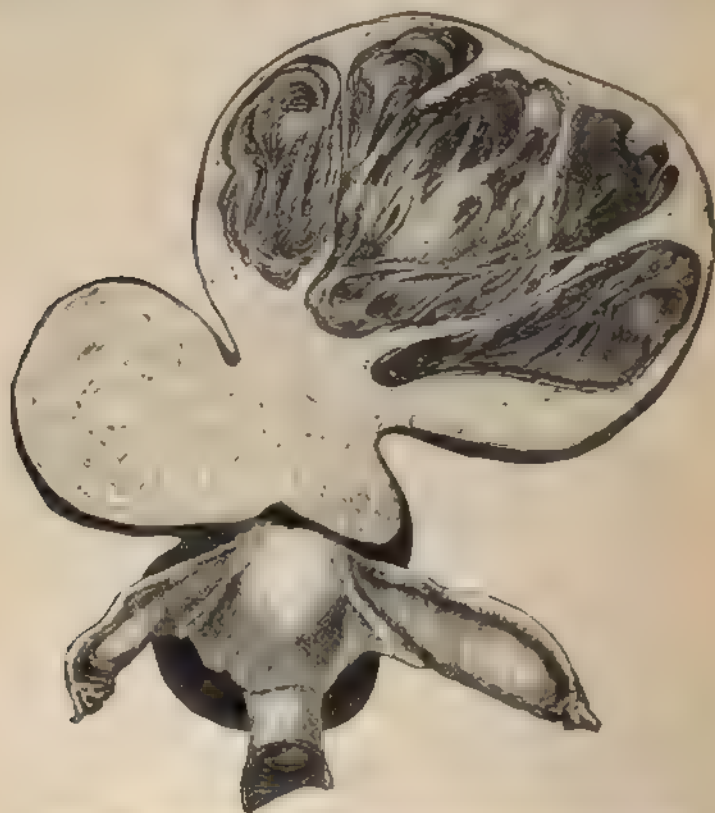


FIG. 122. Uterine Fibroids, with Cavernous Structure (Fibro-cystoma) in one of them (Schroeder).

a species of uterine calculus. Gangrene, from the destruction of the vascular connection, is by no means unknown, and the result of this may be spontaneous attempts at expulsion of the dead mass, —successful occasionally, or leading to death by septicæmia. It is a moot point whether true cancer is ever developed in their substance, but I feel almost absolutely certain that I have, more than once, seen the development of rapid sarcoma in fibroids of long and slow growth: and this is

consistent with the similarity between the ultimate histological constituents of these two forms of tumour.

Fibroids are most commonly developed in the body of the uterus, and it is advisable to consider those of the cervix separately. The posterior wall of the uterus is more liable to their presence than the anterior, and the side least of all. Similar structures are met with, although comparatively rarely, in other parts of the genital apparatus where muscular structures exist, such as the ligaments, Fallopian tubes, ovaries, vagina, or vulva; and a similar form of tumour, though rarely large, is met with in the male prostate. The uterus itself (even those portions which are not themselves included) is altered in shape and consistency by the presence of a fibroid growth. Thus a fibroid mass at the lower portion may cause general hypertrophy in its strictest sense, just as obstacles to the action of the heart cause true hypertrophy there; the mucous lining which covers a fibroid may also hypertrophy or attenuate, and the whole organ may, by even a small fibroid, be tilted backwards or forwards, pushed downwards, dragged upwards, or even turned inside out in the form of inversion (*q.v.*). In the



FIG. 123. Typical Varieties of Fibro-myomata, semi-diagrammatic. 1, sub-serous; 2, sub-mucous; 3, interstitial; 4, intra-uterine polypoid; 5, cervical.

case of subserous fibroids, *i.e.*, those growing from the outer wall, there may be no enlargement, but even atrophy of the uterus. I removed one weighing 12 lbs. by abdominal section, when the uterus was of extreme infantile type and size, the supra-vaginal portion of the cervix forming a fine pedicle of less than half an inch in diameter.

Types of Fibroid Tumours. It was a true clinical instinct which first led to the division of these tumours into three types—the *interstitial*, the *sub-serous*, and the *sub-mucous* (fig. 123). All fibroids are in a sense "interstitial," seeing that they all take their origin from the middle or parenchymatous coat of the uterus, but in the permanently *interstitial* form they remain imbedded in the substance of the wall, increas-

ing, when large or numerous, the size of the whole organ, but not tending to protrude outwards or inwards, and so to become pedunculated, as is the case with the other forms.

The *sub-serous*, or sub-peritoneal type, on the other hand, makes its way by growth in an outward direction, and protrudes from the surface in a more or less polypoid form. The pedicle may become so thin as to allow the tumour to float freely in the abdominal cavity, and this may cause difficulty in diagnosis as to its uterine origin; or, retaining more or less of a sessile character, the tumour may drag the uterus up, elongating its cavity to double or treble the normal length. Adhesions may occur to surrounding parts, and the original pedicle may be stretched to the extent of severance—the fibroid thus transferring itself to completely new quarters. Twisting of the pedicle, leading to gangrene of the tumour, has been met with, but this is a more frequent occurrence with ovarian tumours.

The *sub-mucous* variety grows towards the cavity of the uterus, and has also a tendency to pedunculation. When the pedicle becomes distinct, such tumours are known as “uterine fibroid polypi.” Owing to its invasion of the uterine cavity, the sub-mucous variety of fibroids gives rise to by far the most serious symptoms, and as this is also the form which is most easily within reach of surgical interference it is in every way the most important. Fig. 123 shows diagrammatically the several types of fibroid.

The presence of large fibroid growths is consistent with impregnation and delivery at full time. In a case attended by me, which had been, previous to impregnation, observed by Martin of Berlin and Sir Spencer Wells, I found, after delivery, a tumour much larger than a cocoa-nut and during the period of normal involution I commenced giving large doses of iodide of potassium. Whether as a result of this, or not, I am of course unable to say positively, but rapid diminution commenced from the first, and in less than a year there was no trace of fibroid left. Others have also noticed this tendency to absorption during the post-puerperal involution period, and Schröder gives a list, with references, of thirty-six recorded cases of disappearance of fibroids at that or other times, although only one-sixth of the number were stated to have occurred during the post-puerperal time. The usual result of large fibroid growths is, however, sterility of more or less mechanical causation, or abortion from interference with the normal process of gestation.

Symptoms.—The symptoms caused by a uterine fibroid vary very greatly, this variety being due mainly, though not wholly, to the mode of its implantation. In sub-serous or even, not very infrequently, in interstitial examples, there may be absolutely no subjective symptoms at all, and

their discovery, even when of considerable size, may be purely accidental. I have several times been consulted by ladies recently married, whose husbands were the first to suspect that there was something wrong, though the mere fact of marriage had in one or two of these produced hyperæmia, and led to some discomfort unfelt before. The sub-mucous form is rarely, if ever, free from symptoms. In a general way the symptoms may be defined as consisting of:—

- | | |
|------------------|-------------------------------|
| 1. Menorrhagia. | 4. Pressure symptoms upwards. |
| 2. Metrorrhagia. | 5. Do. do. downwards. |
| 3. Dysmenorrhœa. | |

1. *Menorrhagia* is undoubtedly the most common symptom, and is scarcely ever absent in the sub-mucous variety, rarely in the interstitial. It may creep on gradually, and almost unnoticed at first, or may be developed pretty acutely. It depends on the irritation, and consequent hyperæmia, often with chronic thickening, to which the lining of the uterine cavity is subjected, and it is the chief source of danger. The same condition of the mucous membrane may cause permanent leucorrhœa, but this is by no means so constant. Whenever a woman of thirty years of age or thereabouts begins to suffer from menorrhagia, fibroid tumour must be strongly suspected and searched for.

2. *Metrorrhagia* frequently accompanies menorrhagia on very slight provocation, and sometimes occurs suddenly, and with excessive violence. Death has occurred in this way as the first and only symptom. The discharge thus caused, or even that caused by menorrhagia, is not free from danger in other ways than by its mere excess; its retention may give rise to septicæmia. About two years ago, in consultation with one of my colleagues, I saw a lady, who had a violent attack of flooding, there having been no previous menorrhagia or other symptom of disease. She had, very properly, been plugged before I saw her. On removing the plug a large sub-mucous fibroid was clearly discernible, the os being widely dilated by its pressure. Little or no further hæmorrhage occurred, but on the third day the temperature ran up to 105°, the pulse followed suit; there were slight rigors and some anomalous head symptoms, and she died in a very few hours, evidently of septicæmia.

3. *Dysmenorrhœa*, when it occurs, is due either to the mechanical obstruction to the flow, with consequent uterine forcing, or to the retention of clots with a similar uterine action, or to the general congestion, with or without a certain amount of endo-metritis, or perhaps to flexion of the uterine body and canal.

4. *Pressure symptoms upwards* are much more rarely felt than might be supposed from the enormous size often attained by these growths.

Indigestion may show itself in various ways, the cause being at first little suspected. The pressure on the abdominal walls is so gradual that it is often long unfelt, but respiration and general circulation are ultimately interfered with. Neuralgia of very indefinite seat is also common, and as with other abdominal tumours, chronic peritonitis may be set up. Yet, though the latter result does occur, the great infrequency of abdominal inflammatory adhesions, or of ascites, may almost be said to distinguish fibroids from tumours of a more malignant nature.

5. *Pressure symptoms downwards* in the pelvis are, on the other hand, very common, and, next to hæmorrhage, their results constitute the chief danger of this affection. Such symptoms are apt to be aggravated at the menstrual periods. The bladder or urethra is chiefly interfered with, and sudden retention of urine is often the first symptom which leads to a diagnosis. The constant pressure of even a small fibroid in the anterior wall of the uterus may set up true cystitis, which I have often seen treated, and of course ineffectually, as the sole affection. Pressure on the rectum may cause constant tenesmus and constipation, and the pelvic veins and nerves are affected as they are in pregnancy. Paraplegia is a very rare result of the pressure. Pressure on one or both ureters may occasion stasis in the renal flow and consequent hydronephrosis, and Matthews Duncan has especially pointed out the occasional, though fortunately rare, occurrence of uræmic poisoning and death in this way. There is no more miserable state than that of a woman, in whom a fibroid tumour has developed with sufficient rapidity and latency to become incarcerated within the true pelvis. The irremediable pressure symptoms are constantly on the increase. As soon, therefore, as such a growth is discerned, of any size, steps should be taken to raise it above the brim of the pelvis, if possible.

The symptoms of a strangulated sub-serous fibroid are those of collapse, combined with the physical signs of tumour, thus resembling those produced by a sloughing sub-mucous one. All the symptoms due to a fibroid may and do often abate after the cessation of the menstrual epoch, and more or less shrinking of the mass may also then occur. The same change may, though it comparatively seldom does, happen spontaneously before this period, and, as I have mentioned above, is met with as an occasional accompaniment of *post-partum* involution. This may be looked on as the most satisfactory natural attempt at cure. Other more or less unsatisfactory attempts are made by pedunculation or sloughing, or enucleation of the mass, and its subsequent expulsion by uterine contraction; but these will be best referred to when speaking of what can be done by art in the way of cure.

Physical Signs.—The physical signs of fibroid growths are those ascertained by abdominal palpation and auscultation, by bi-manual examination, by the sound, and, in the sub-mucous variety, by dilatation of the

cervix. If the tumour is large enough, there is felt above the pubes a firm, hard, non-fluctuating, rounded mass. It is perfectly smooth, as a rule, but there may be distinct knobs of similarly smooth hard tissue, or an equally distinct sulcus in the mass, both of which indicate the existence of multiple growths. The tumour is generally freely movable from side to side. It may be quite central or quite lateral. It never, in my experience, shows contractility when grasped with the hand, and it is generally, though with some exceptions, almost painless to the touch. A distinct souffle is not very infrequently heard, which cannot be distinguished from the uterine souffle of pregnancy. On combined manipulation we can detect the physical signs of smaller fibroid tumours than can be made out as above. The uterus is felt to be larger and heavier than normal, except in the case of very distinctly pedunculated sub-serous growths. Nevertheless, it is freely movable, unless the tumour is very large, or has previously excited pelvic inflammation. The shape varies, but it is seldom quite that of a gravid uterus of the same size, though it may resemble it very closely, and the consistency is firmer. There may exist a decided offshoot, most commonly behind, which is totally unlike anything else of purely uterine origin, though an adherent ovarian tumour may cause difficulty in diagnosis. In the case of large tumours the whole brim of the pelvis may be blocked by a solid mass, from some portion of which the cervix uteri will be found to project. The cervix is thus to be detected ordinarily as a distinct nipple, more or less of the normal size and shape. It has never the characteristic softening of pregnancy, but may be abolished and stretched out over the mass in the intra-uterine or sub-mucous variety, as it is at the full time of pregnancy or during labour.

The sound will give valuable evidence, if it can be introduced at all, which is not always possible; it will, in the case of large tumours, show a greatly elongated cavity, and as this may be twisted and inaccessible to the ordinary sound, a gum-elastic one may be used. The direction of the sound will show the direction of the cavity, which may be traced in any direction, either as following the centre of an interstitial, or bending round a sub-mucous growth. When pregnancy can be set aside, and when uterine enlargement undoubtedly exists along with uterine hæmorrhage, dilatation by the sponge or tupelo tent admits the finger, which can thus detect, in the case of sub-mucous fibroids, the presence of a solid mass bulging into the uterine cavity, and adherent to its walls.

Small fibroids, growing outwardly from the anterior or posterior external wall, can only be made out by careful bi-manual examination, which shows their continuity with the uterus, and their mobility with it, while the fundus is felt as a separate protuberance, a fact corroborated by the passage of the sound within it.

Diagnosis.—The diagnosis of uterine fibroids, generally easy, is sometimes fraught with great difficulty. The following conditions may be, and have occasionally been, mistaken for it:—

(1) Pregnancy; (2) ovarian tumours; (3) hæmatometra and hydrometra; (4) chronic metritis or hypertrophy; (5) cancer; (6) pelvic exudations—peritonitic, cellulitic, malignant, or from hæmatocoele; (7) uterine flexions; (8) extra-uterine foetation; (9) fecal accumulation; (10) growths of the bony pelvis.

Briefly, these may be differentiated as follows:—

1. *Pregnancy* has a history of suppressed menstruation *versus* menorrhagia in the case of fibroid growths. Mere sympathetic signs, such as swelling of the breasts, sickness, &c., are common to both affections. Pregnancy has a very definite rate of increase in the size of the tumour, and the swelling is wanting in hardness, is always of one definite shape, and is often contractile on manipulation. The changes of the cervix in pregnancy are equally definite. The uterine souffle is infinitely more common in pregnancy, but not *per se* diagnostic. The fetal heart must be watched for, and if necessary waited for, in all doubtful cases, until the safety of using the sound is assured. Ballotement is never met with even in the case of intra-uterine or polypoid fibroid growths. I attach little importance to the purple discoloration or pulsation of the vaginal walls; I have seen them as great with a fibroid as in pregnancy. In all doubtful cases the safe plan is to wait and watch, and avoid rash diagnosis (*see* Appendix).

2. *Ovarian Tumours.*—Small solid ovarian growths may closely resemble sub-serous fibroids, but complete separation from the uterus, ascertained by bi-manual examination, and the absence of increased menstruation, or of lengthening of the uterus, indicate ovarian tumour; also great rapidity of growth, or the presence of ascites will distinguish sarcomatous ovarian growths, true slow-growing fibroids of the ovary being excessively rare—the presence of fluctuation in the tumour points almost certainly to ovarian origin (but *see* Fibro-cystic Tumours). A small ovarian tumour glued to the uterus by inflammation is indistinguishable except by aspiration and examination of the fluid contents, if any. Large ovarian tumours should seldom be mistaken for pure fibroids; their physical signs will be discussed later. Cysts of the broad ligaments or Fallopian tubes may for our present purpose be classified along with ovarian cysts.

3. *Hæmatometra and hydrometra* (*see* Chap. VI.), besides their fluctuating or elastic properties, and the recognisable occlusion of the genital canal at some point, have a very definite and distinguishing history of their own, and absence of hæmorrhage is also a distinguishing feature.

4. *Chronic metritis or hypertrophy*, which we discussed in the last chapter, has also a history connecting it with some puerperal or other causation. It never assumes the size of very large fibroids, is never multiple or divided in shape, but it must be confessed that a moderate sized interstitial fibroid and a quiescent chronic hypertrophy cannot always be differentiated by physical signs; their history, past or future, is our sole guide.

5. *Malignant disease of the fundus uteri* has often for a time the same physical signs as a fibroid growth, but generally commences later in life. Its rapid increase, its predominating painfulness, its greater tendency to metrorrhagia, its rapid fixation, and its early accompaniment by fetid or watery discharges, soon excite suspicion, and lead to dilatation of the cervix and exploration of the cavity, with microscopic search for the cancerous elements. The diagnosis can only be made certain in this way. But multiple sarcoma may for a time retain every one of the characters of multiple fibroid growths. The presence of tumours in other organs would point to malignancy.

6. *Pelvic exudations* of lymph, coagulated blood, or malignant deposits, may resemble fibroids in their hardness and apparent connection with the uterus. The history of a pelvic inflammation or hæmatocoele is there to guide us, and the complete fixation and imbedding of the uterus confirm our differentiation. The sound will probably show the uterus to be normal in size, though perhaps altered in position by the exudation. But if deposit has occurred round a pre-existing fibroid, with no distinct previous history of its own, time and careful watching of the process of absorption in the exudation may alone reveal the double character of the disease.

7. *Uterine versions, and still more flexions*, may, without care, be easily mistaken for small fibroids of the anterior or posterior wall, though the reverse is more often the case. A smooth rounded mass in Douglas's pouch, or in front of the uterus, easily movable with that organ, may be either. Mere symptoms are in no way diagnostic, neither is the direction of the cervix. But the direction taken by the sound, and its power of completely moving the body of the uterus and replacing it in its normal situation, reveal the true character of the affection. A bi-manual examination should always be made before and after reposition by the sound. If the uterine contour can be thus traced, it will show that the replaced uterus has still adherent to its wall a small projecting fibroid, which, by its weight, caused the displacement.

8. *Extra-uterine Foration*.—This comparatively rare affection, whose pathology appertains rather to obstetrics, has occasionally been mistaken for fibroid tumour, though much more often for a tumour of the ovary. The distinct history, up to a certain point, of pregnancy, then, perhaps,

that of a severe attack of pain and collapse recovered from, or the continued signs of pregnancy, with those of a living child, and the various signs which differentiate a uterine from a non-uterine tumour, are our main guides. Growth is more rapid than with a fibroid, attacks of peritonitis are more common, and the tumour may show signs of fluid contents, with or without aspiration.

9. *Fœcal Accumulations.*— I would not insert this were it not that I have lately seen a fibroid mistaken more than once for an accumulation of feces. If the physical signs were not sufficient to prevent this the result of treatment would soon prove so.

10. Bony growths of the pelvis are more fully discussed in obstetric works.

The diagnosis of the three types of fibroid tumour—sub-peritoneal, interstitial, and sub-mucous—from one another, is not always possible, yet it is highly important, before deciding on any mode of surgical treatment. The chief reliance must undoubtedly be placed on a careful estimate of the physical signs observed bi-manually, or with the aid of the sound or cervical dilatation. We must endeavour thus to make out not only the fact of a solid uterine growth, but its whereabouts in relation to the organ. Purely sub-peritoneal fibroids are usually very hard, slow in growth, often multiple, and unaccompanied by much hæmorrhage or menorrhagia. If pedunculated they are also generally painless, but when they are sessile they are sometimes the most painful of all, the pain being constant, and not irregular and expulsive, as in the case of intra-uterine growths. The interstitial tumours are usually quicker in growth, and take an intermediate place between the sub-peritoneal and the sub-mucous in relation to pain and hæmorrhage. Hæmorrhage and mucous discharges are most frequent with the sub-mucous, as is also pain of a distinctly spasmodic, forcing, and intermitting character. In all our calculations as to treatment, it is necessary, however, to bear in mind that the proved existence of one uterine fibroid of any of the three clinical types is presumptive evidence of the real or potential existence of others which may assume a different relation to the uterine wall or cavity.

Treatment. The treatment of fibroid tumours is, in virtue of their extreme frequency, a matter of great importance, and it is highly desirable that every practitioner should have clear ideas of what can and what cannot be done in this direction, even though he may not be prepared himself to undertake some of the more serious operations which have been proposed. As a preliminary, it is desirable to see what Nature occasionally attempts herself.

There are six ways in which Nature may be said to undertake the cure of fibro-myomata:

1. By absorption.
2. By the menopause, which may lead to absorption, complete or partial, or to mere quiescence and arrest of growth.
3. By extrusion into the uterine cavity as polyp, and subsequent expulsion.
4. By calcification, with arrest of growth, quiescence, or expulsion as foreign bodies.
5. By ulceration of the mucous covering and ex-
pulsion.
6. By sloughing of the whole mass and expulsion.

} enucleation

1. Of absorption we have already spoken. Recorded facts leave no doubt as to its occasional occurrence at the menopause, or during *post partum* involution, or otherwise. Common experience demonstrates its infrequency, except in the first instance.

2. The quiescence of all symptoms, and cessation of growth, without absorption, are not uncommon at the menopause, and may occur previously or subsequently. The cessation of the periodic hyperemia explains this fully enough at the menopause; when occurring at other times, we have yet to seek for the true explanation, unless it is to be found in Kleinwachter's observation, mentioned on page 258.

3. "Polypisation," to coin a word, occurs equally in the sub-serous and sub-mucous varieties. The former it affects by diminishing their uterine connections, and lessening their circulation, thereby doubtless retarding their growth the latter it affects very differently. Projecting them into the hollow muscular uterus, it increases for a time the gravity of the symptoms, but as the uterine contraction is encouraged and the pedicle becomes elongated, expulsion through the cervix, and finally, in very favourable cases, complete separation, occur. Art can imitate this by those remedies which lead to uterine contraction, and by surgically assisting the final evulsion of the mass.

4. Calcification is but a rare occurrence, and attempts to produce it artificially have so far proved futile.

5. Ulceration of the mucous covering, from tension or pressure, occurs every now and again in large sub-mucous tumours, and as a result the fibro-myoma bulges through, and by uterine pressure may finally be "enucleated" and cast forth. Naturally or artificially this is a dangerous resource. Time and prolonged muscular effort are required when the attempt is Nature's, and either from this cause or from septicæmic changes during the process, the patient is apt to sink unrelieved.

6. Sloughing of the whole mass is a still more dangerous alternative, and I am not aware that any one has dared to copy it except in the case of complete polypus.

We may divide the methods of treatment into those which are pallia-

tive of symptoms and those which aim at cure, though, of course, they will sometimes overlap.

Palliative Treatment.—The symptoms which we are chiefly called on to palliate are those due to excessive weight and to the consequent pressure on the pelvic viscera,—the rectum, bladder, &c.,—and those caused by excessive sanguineous discharges—menorrhagia or metrorrhagia. The mere weight of a fibroid may be made bearable in two ways. When it is large and above the pelvic brim, a well-fitting abdominal belt is of great service, provided that it lifts and does not press down the mass. When smaller, and still within the true pelvis, a watch-spring pessary with a diaphragm (fig. 109) will often give great relief, partly by its mechanical support, and partly by thus diminishing the tendency to passive uterine congestion. A Garrel's air-pessary (fig. 140) is sometimes useful in the same way, and its continuous use tends gradually to lift the mass above the pelvic brim in cases where this cannot be done at once. The tendency of fibroids to temporary oedema, which has been formerly mentioned, adds for the time being to their weight and size, and when this is suspected moderate saline purgation is of service, especially at the pre-menstrual periods, and if accompanied by rest. Circumferential pressure on the bladder, rectum, and pelvic vessels and nerves is not only productive of great discomfort, but if the tumour cannot, as it increases, pass upwards beyond the brim, may prove fatally obstructive. Whenever, therefore, the growth assumes large proportions, no effort must be spared to raise it upwards and give it room for expansion. For this purpose it may be necessary to place the patient on her knees and elbows, or rather knees and chest, thereby assisting the pressure made from the vagina or rectum. It should also be borne in mind that, as in the retroversion of the gravid uterus, the sacral promontory offers an obstruction which may be evaded by deviating our pressure towards one or the other side of it. Placed in this position, two or more fingers are introduced into the vagina, and steady pressure is made in the required direction. A second or third attempt will often succeed when a first has failed, and pressure by one or two fingers through the rectum is often more effective than through the vagina. When small fibroids lead to displacement of the uterus, the same treatment by pessaries is demanded as in other cases of the same malposition.

The menorrhagia and metrorrhagia of fibroids are very unamenable to treatment. Such remedies as seem to diminish ovarian hyperæmia are called for, in addition to the diminution of general congestion by mechanical support. Bromide of potassium and *cannabis Indica* may be especially named. Ergot of rye, by producing uterine contraction, has also a powerful and a beneficial effect. It should be given for some days previous to the period, and increased during its existence. In a few cases it

seems to do harm and increase the flow, but experience of the individual case is the only test. The regular administration of quinine or strychnia has also a tonic and anti-hæmorrhagic effect on the uterus affected by a fibroid. Marriage should be forbidden to the unmarried sufferer, and physiological rest enjoined on the married.

An attack of metrorrhagia or even menorrhagia may be so severe as to threaten extreme depression or imperil life. In such cases temporary and sometimes extreme measures are required. I have found hot-water bags to the spine occasionally successful, but if not speedily so they must not long be trusted to. The insertion of a piece of ice into the vagina will sometimes cause rapid cessation, but although I have never seen it actually follow, I cannot avoid the dread of inflammatory reaction in the pelvis. Opinion, in many cases such as these, is at present in a state of fluctuation between hot and cold applications. I have now several times, though with some fear, used Emmet's *hot-water* vaginal injections in fibroid metrorrhagia, and in every case it has seemed to be successful. Above all things avoid the hesitating plan. Here, as in *post partum* hæmorrhage, it is the spasm produced by heat or cold that is mainly wanted. Plugging may become absolutely necessary, and, unless the cervix is widely dilated, it is better to plug the cervix uteri than the vagina. One or more tents must be introduced. They should be removed in six or eight hours, and others introduced if the flow continues unchecked. The dilatation of the cervix thus produced will often suffice to stop the tendency to extreme hæmorrhage for long periods. I can hardly endorse the explanations of this fact which I have hitherto seen, but I have none better of my own to offer. Seeing that the hæmorrhage in these cases proceeds mainly from the uterine mucous membrane, and not from that covering the fibroid, the practice of swabbing the cavity with an astringent is rational and often useful, and tincture of iodine, only once or twice diluted, is the best of all, for antiseptic reasons. A Playfair's probe is the best introducer. It is very difficult to explain the action of freely incising the tumour itself, or of slightly dividing the cervix in several places by the hysterotome or thermo-cautery knife. Both of these plans are recommended in most systematic treatises. They undoubtedly tend to the furtherance of expulsion or lowering of sub-mucous fibroids; and, when polypisation is distinctly in progress, I have no hesitation in acting upon the latter suggestion, but I dread the possible result in other cases. When menorrhagia is excessive, by its long duration, rather than by its severity, it may to a certain extent, and with safety, be cut short by passing a plug or successive plugs of the glycerole of tannin and carbolic acid up to or within the cervix. Within recent times the arrest of hæmorrhage has been sought by the removal of the ovaries and the consequent artificial production of the

menopausal. I prefer to consider this under the heading of curative treatment. Let me merely say here that removal of the ovaries has distinctly been proved to cause cessation of fibroid growth and of consequent hæmorrhage, and that it has in some few cases entirely failed to do either.

Curative Treatment.—The curative treatment of fibroids may be fitly divided into the medical or medicinal, and the surgical.

As regards the medicinal, the fallacies are endless. We do not know in any case the probable rate of growth, or the periods at which that growth may increase or cease. Spontaneous absorption has been already stated to occur occasionally. In the case of smaller tumours, diagnosis from hypertrophy is not always certain, and the constant involutionary changes of the uterus *post-partum*, *post-menstrual*, or *post-inflammatory*—may deserve the credit we give to our remedies.

Iodide of potassium would seem to be the most likely of all remedies, or iodine or potassium in various forms. I confess myself unable, after twenty-five years' experience, to say how far they are effective. I have given them in the fullest doses with no more effect than so much water. I have seen very remarkable diminution under their action, but I never could in any case of the sort free myself from the suspicion that natural involution might be the true factor. The same remark applies to the use of the natural waters of Kreuznach or Woodhall. (Edema and, apparently, solid bulk, have diminished occasionally, but only occasionally. In the only cases of persistent diminution I have seen natural involution undoubtedly played a most important part. Agnosticism is as allowable in medicine as in theology, perhaps more so. The bromide of potassium, which, of course, includes its potassium element, was firmly believed in by Sir James Simpson as a powerful remedy for fibroid tumours. I fear I can only recommend it as a sedative of discomfort, and as an ovarian sedative in hæmorrhage. The chloride of calcium (*5ss. ter die*) has been proposed, to calcify the mass and thus lead to cessation of growth, or to attempts at expulsion, which may be completed by art. General calcification of the system would be somewhat of a calamity to the patient, and I fail to see how the very hypothetical action of the remedy is to be directed to one organ only, and even to one special portion.

Ergot of rye, as we have seen above, may diminish hæmorrhage for a time by increasing uterine contractility. Hildebrandt was the first to claim for its subcutaneous injection into the body the power of producing real absorption of fibroid tumours. Atthill of Dublin has strongly supported this view, as has also A. R. Simpson. I am utterly at a loss to account for the remarkable results said to have been attained by them. I have used it, as prescribed by Hildebrandt, in a whole ward

full of patients, whom I have gathered for the purpose. I have avoided in most cases, though not in all, the production of local abscesses. I have tried it most perseveringly in consultation practice, and, beyond the trifling contraction and diminution of menorrhagia which result from ergot otherwise administered, I have found no permanent result. To those who wish further to investigate the matter, I would recommend an injection of Bonjean's ergotine, gr. iii. ; chloral hydrate, gr. i. ; and distilled water ℥ viii.,—or of ℥ x. of Tanret's solution of ergotinine. This should be used every other day, and deeply introduced into the cellular or muscular tissues of the buttock, until success or failure is apparent. A single injection or two in this way, when time is of great importance, is a useful precursor to the ordinary use of ergot as a hemostatic.

Electrolysis has been freely tried by Cutter of Boston and others, and many cases are reported where its persevering use has appeared to be followed by arrest of growth, or even shrinking and disappearance. But the statistics I have seen have not appeared to differ sufficiently from those which might be obtained from a number of untouched cases. Emmet, moreover, states that many deaths have occurred from peritonitis and metritis in cases treated by electrolysis. The results of an almost completely animal diet, also recommended by Cutter, on very doubtful theoretical grounds, are open to the same criticism.

The *surgical treatment* of fibroids demands very careful consideration. Some of the procedures recommended are the outcome of the successful results of ovariectomy, and this has, perhaps, led to a more sanguine estimation of their safety and value than is yet justified by facts. The removal of those tumours which exist almost from the first as intra-uterine polypi, or which have in time become such, will be spoken of shortly. With regard to them, surgical treatment has long been in vogue and is eminently successful, and the methods of operation are matters of pretty general agreement. We are now concerned only with those fibroids which are sub-serous, whether pedunculated or not, with the interstitial form, and with the sub-mucous varieties which have not undergone polypisation. The first of these—the sub-serous fibroids—are usually free from distressing symptoms, except occasional severe pain; and as long as life is in no way imperilled by that, or by hæmorrhage, or by menorrhagia in the pelvis, a serious operation is uncalled for and inadmissible. But if the mass can be distinctly ascertained to be connected with the uterus by a very thin pedicle, removal by abdominal section is about as safe as ovariectomy. The other two forms often give rise to so much suffering or weakness, only very partially remediable by medicine, that an operation of moderate gravity, and with a fair chance of success, would be willingly encountered, and may be imperatively called for. It must not be forgotten, however, in the calculation, that a fibroid of one

kind, or in one locality, is very apt to be accompanied or followed by others of different localisation.

Two operations are proposed in imitation of natural processes of cure, viz., (a) the removal of the ovaries, in order artificially to bring about the menopause, with its frequent, though not constant, cessation of hæmorrhage and growth; and (b) enucleation and evulsion of the mass. The former is applicable to all the three types of fibroid, the latter to the sub-mucous only, or to interstitial growths which are practically sub-mucous.

In addition to these two methods, (c) removal of the tumour through the abdominal wall, with or without a segment of the uterus; and (d) removal of the combined uterus and tumour in the same way, or *per vaginam*,—are operations which are at present demanding and securing the fullest discussion at the hands of our profession.

(a) The most recent and the least dangerous of the two former operations is removal of the ovaries. This was performed, though not for the same purpose, within a few weeks of the same time, by Battey in America, Hegar in Germany, and Lawson Tait in England. Battey was the first to publish his case in America, and the operation is therefore known there as Battey's. But there is much obscurity as to whether this title is reserved for removal of presumably normal ovaries, and if so, whether it should include their removal for this purpose only or for other purposes. I have a strong objection, not universally shared, to this biographical form of nomenclature. Normal ovariectomy, oophorectomy, and the like terms, have also each special difficulties in the way of application. Removal of the ovaries to imitate the menopause, and thus to imitate nature's most common method of arresting the troubles of a fibroid growth, expresses all that we want at present. But removal of the ovaries alone is not all that is recommended. Without endorsing any particular views as to the function played by the Fallopian tubes in menstruation, their tendency to enormous congestion at the periods must be admitted; and whether this is an inherent property, or a mere accompaniment of other local congestions, there is on all hands a tacit understanding, due to the persistent teaching, of Lawson Tait, that they should accompany the ovaries, of which they are in a sense the mere ducts. I have endeavoured to form an impartial estimate of the value of this operation for our present purpose, and have come to the conclusions—

1. That with antiseptic precautions, in their truest sense, and with a fair experience of abdominal surgery in the operator, the operation is often by no means a very serious or difficult one. The removal of ovaries known to be the seat of chronic inflammation, and with chronic inflammatory surroundings and adhesions, is a totally different matter. Occa-

sionally, however, when the operation is undertaken on account of fibroid tumours, very great and almost insuperable difficulties arise in finding or removing the ovaries and tubes.

2. That in a very large proportion of cases, though not in all, the expected result as to the fibroid follows. I cannot more exactly estimate the proportion of successes.

3. That the gravity of the operation is much less than that of enucleation and evulsion, or of removal of the uterus, or of a sub-serous fibroid, unless it is one with an exceedingly small pedicle.

For these reasons, I would advise that, in the case of a fibroid accompanied by very exhausting hæmorrhages, and when these had failed to yield to careful treatment as above described, and when the natural menopause is not presumably near at hand, recourse should be had to this operation. No statistics can ever give absolutely the comparative risk to life and happiness, of the operation on the one hand, and of the continuance of such symptoms on the other. There will always be room for that judicious quality of mind which is the highest gift of the physician, and for the same quality, in a limited degree, on the part of the patient.

(b) *Enucleation* is at best a somewhat barbarous proceeding, although sometimes we are driven to it as our only resource. There are three steps in the operation:—(1) sufficient dilatation of the cervix; (2) making an opening in the mucous covering of the tumour; and (3) evulsion of the fibroid mass. Dilatation may be sufficient to begin with, and certainly the most suitable cases are those where a large sub-mucous fibroid, although quite unpedunculated, has bulged downwards so far as to thin the os and cervix uteri, and to dilate it as in the later part of the first stage of labour. Otherwise, dilatation must be completed artificially, and the more rapidly the better, by one or other of the dilators mentioned before (p. 186), followed up by Barnes's fluid obstetric dilators, if the presence of the tumour will permit of their introduction. An incision of at least an inch, better two inches or more in length, is now made in the capsule of the tumour by a probe-pointed knife. It should be nearly half an inch deep, unless the capsule is evidently thin and gapes easily. The cautery knife is well adapted for this purpose if the tumour can be freely exposed to view by the duck bill. It affords less danger of septicæmia or hæmorrhage. If bleeding is severe it must be arrested by a well-adapted styptic plug. In some cases we may prefer to cease here, and to trust to the effect of the incision to arrest or diminish the chronic hæmorrhage; and in course of time spontaneous expulsion may occur, to be aided by the free use of ergot, or by artificial traction. When, however, we have decided on the urgent necessity for operation, it is better to proceed to immediate enucleation.

The tumour must first be separated from its attachments as far as possible, sometimes an easy, sometimes a most difficult and dangerous proceeding. Various instruments have been devised for this purpose by Simpson, Sims, Thomas, and others; but the operator's finger, a good strong steel male sound, and a blunt-edged lithotomy scoop are sufficient. The first should be used as much as possible, the others only in aid. The mass is now well seized by the strongest vulsellum available, and attempts at dragging it through are made, alternately with further attempts at separation. As the hold of the vulsellum loosens it must be renewed, and a certain amount of torsion comes in aid of both separation and evulsion. It may be necessary to further enlarge the os by nicking its edges slightly in several places, or to divide the tumour by the cæraseur, cutting as much as possible in its long axis, and avoiding a straight cut across. Under favouring circumstances, a large tumour may thus sometimes be removed rapidly and safely, but sometimes portions, or the whole, must be left, with great risk of septicæmia. The shock may be fatal, and I have known the uterus to be completely inverted, and subsequently reduced. The difficulty does not cease even when the tumour is in the vagina, but no obstetrician need despair when he has got this length. The free use of iodine or carbolic acid to the interior of the uterus certainly minimises the septic dangers. On the whole, I think I have rightly described the operation as a "barbarous" one; and, with the possibility of arrest of symptoms by removal of the ovaries within our reach, I would reserve it for those cases only where nature had fairly commenced the process by sloughing of the wall, or of the tumour, or by very considerable intra-uterine protrusion, which was not sufficiently rapidly tending to polypisation, whilst the symptoms were extremely urgent.

(c) *Excision per Abdominem* of even very large fibroid growths, has been frequently performed with perfect safety, and, in the case of sub-peritoneal growths, with a distinct and not very large pedicle, is not a very formidable operation. The pedicle may be transfixed, like that of an ovarian tumour, with strong silk, tied in two or more parts, taking care to tie a second ligature firmly round the whole pedicle, the ends being cut short and left to take care of themselves as in ovariectomy. It is also a desirable precaution to tie separately with silk or gut any large vessel that is to be seen in the pedicle, and to invert and unite the peritoneal edges of the stump. But this procedure is safe only with tumours which give rise to so few urgent symptoms in general, that they do not justify the opening of the abdominal cavity. As a matter of fact, it has not infrequently been through errors of diagnosis that they have been exposed.

Is it possible to remove, with any reasonable safety, sessile sub-

peritoneal growths, or, what is practically the same thing, interstitial growths with little or no intra-uterine tendency, but which nevertheless cause grave and dangerous symptoms? The removal of these involves, as a matter of course, the removal of some portion of the uterine wall, and the opening of its cavity, and there is no more serious operation than this in the whole of surgery. With regard to ordinary cases of sessile tumours of the uterus, the dangers of removal are so great that I prefer, instead of discussing them, to sum up the whole in the words of Mr Knowsley Thornton, from an able paper read at the Annual Meeting of the British Medical Association (*Brit. Med. Jour.*, Oct. 13, 1883): "I have performed partial hysterectomy three times, and all the patients died. Once I used the Wells's ovariectomy clamp, and it caused a laceration which extended in the wall of the uterus, and caused death from septicæmia; then I tried ligatures and sutures of the flap, and the patient died of septicæmia; then I tried simple ligatures applied by transfixion, and the patient also died of septicæmia. I shall not again in any case attempt a partial hysterectomy, as I am convinced that it is both safer and easier to remove the whole organ, and deal with the cervix instead of the uterine wall." No one doubts the comparative safety of removal of the ovaries. Mr Thornton gives fifteen cases only, but of these all recovered; ten have entirely ceased to menstruate, and have lost their tumours; one has irregular menstruation, but the tumour is diminished to one-third, and is diminishing; one has had no further menstruation, and the tumour is going fast; one continues to menstruate, and the reduction of the tumour is not marked, but she no longer floods or has pain; two others are too recent for any certain prognosis.

(d) *Complete Hysterectomy*.—Is it possible that the result of either partial or complete hysterectomy, together, of course, with the removal of the ovaries and Fallopian tubes, can possibly vie with oophorectomy in safety or success? Nearly all who have attempted these operations—Wells or Keith, Bantock or Thornton, Tait, Péan, Billroth, Hegar, or Schröder—are agreed that complete hysterectomy is less dangerous than the partial form, and less difficult of accomplishment. But even in complete removal the mortality is frightful. Keith alone has had any reasonable success. Instead, therefore, of attempting a description of the various methods that have been proposed, of the clamps and constrictors devised for securing the pedicle externally, or of the means of arresting hæmorrhage from the uterine or other pelvic blood-vessels, I will content myself, as more consistent with the scope of this work, with a quotation from one who cannot be considered, at any rate, a coward in regard to abdominal operations, or as over-burdened with conservatism or anti-surgical prejudices. Lawson Tait (*One Thousand Cases of Abdominal Section*, pamphlet, 1881) says:—"I now come to speak of hysterectomy, concerning

which I may say at once it is an operation which I detest. Its mortality is fearful. Sir Spencer Wells has had over 50 per cent. of deaths, and my own mortality has been 35 per cent. Bantock has recently had a run of bad luck; the mortality of other operators is not fully displayed, and Keith alone has had brilliant results. . . . There can be no doubt that for uterine tumours the extra-peritoneal method of dealing with the pedicle is the only one admissible. . . . The details and methods of operation elaborated by Bantock are, on the whole, the best I have seen; but there is something wanting yet to complete success. Every patient, or at least nearly every one, who recovers from hysterectomy does so, as it were, by the skin of her teeth. These cases never go on straightforwardly to recovery as ovariectomies do. The amount of worry which is given me by every case of hysterectomy, even when successful, is such as to be almost beyond the recompense of any fee, and the disappointment inflicted by every death is quite indescribable." Comment on the foregoing is needless.

The whole subject of the treatment of fibroids of the uterus, setting aside those which become intra-uterine polypi, is not very satisfactory, considering their very great frequency, but I will endeavour to summarise it according to our present light. The figures are, of course, intended to be roughly approximate, not precisely statistical.

Given 100 fibroid tumours, 50, at least, will require scarcely any medical or surgical treatment. They will have no troublesome symptoms, and many of them will be discovered by accident alone, or will not be discovered at all.

In the remaining 50, menorrhagia, or some form of pressure trouble, will lead to diagnosis, and demand treatment of some kind. I think it is not too much to say that, of these, the great majority may be rendered perfectly endurable, and compatible with enjoyment of life, by the means recommended above as medicinal, but including the appliances required for lifting up the mass, either by belt or pessary, and occasional minor surgical proceedings, such as scarification, until the menopause brings still further relief or complete cure.

Some 10 per cent. of the 50 (too large a proportion, I think), may require the aid of the operating surgeon. In, certainly, not more than one of them is he driven, perforce, to the repulsive proceeding of vaginal evulsion. In the remaining nine, removal of the ovaries will, with comparatively little danger to life, cure the predominant symptoms, and even ensure absorption of the mass in all but a mere fraction of the number.

These fractions, spread over the whole community, amount, of course, to a considerable number of cases, and, so far, we may say that when there is any kind of pedicle to be got for such tumours, along with the containing uterus, which is often not the case, the whole mass

may be removed, with a mortality of some 40 or 50 per cent. of cases operated on.¹

Up to the present, the great balance of surgical opinion is in support of the belief that it is an advance in practice to treat the stump or pedicle outside the abdominal wall, but it should not be forgotten that the extra-peritoneal treatment of the ovarian pedicle was a great advance upon previous methods, until time had disclosed safer modes of dealing with it intra-peritoneally.

Before speaking of those cases which assume the form of uterine polypi, and which are not only much more amenable to surgical treatment, but which almost invariably demand it, it is advisable to say a few words on the subject of cervical tumours.

Fibroid Tumours of the Cervix.

True fibro-myomata are met with here as in the body of the uterus, but with comparative infrequency (fig. 124). They can hardly, even when small, remain interstitial very long, but soon tend to bulge into the cavity of the cervix, dilating it, and giving rise to severe hæmorrhage and dysmenorrhœa, and then emerging in a more or less polypoid form into the vagina. These are certainly the most unamenable of all to enucleation or to treatment as polypi. I am convinced that I have not infrequently seen small hard fibroids of this kind disappear by absorption, after being compressed by the action of tents. True, such small sessile growths may have been difficult to diagnose with absolute certainty from the products of inflammatory exudation, but the absence of a history of inflammation, the state of the rest of the cervix, quite free from disease, and in more than one case, the presence of uterine fibroids elsewhere, have seemed to place the matter beyond a doubt. I fear there is no way in which the practice could be extended to small commencing growths of the body of the uterus, even were they diagnosed early enough. In other cases, fibroids of



FIG. 124. Cervical Fibroid Growth assuming the polypoid form (Schroeder).

¹ The student will find a very complete statistical summary of cases of gastrotomy for fibro-myomata by Bigelow in the *Am. Jour. of Obst.* for 1883 and 1884.

the supra-vaginal portion of the cervix, grow rather towards the periphery, pushing their way towards the peritoneal cavity. From their low position these are very likely, if large, to give rise to incarceration of the tumour in the pelvis, but fortunately there is a considerable capability of stretching in the cervix, which permits of them, or of masses low down in the body, rising up, and of the formation from the cervix itself of a mobile pedicle. In another class of cases, extension takes place behind or within the vaginal wall, almost as it does in malignant disease, although, of course, it is more localised. The elements of fibro-myomata exist in this situation, and, practically, such growths become vaginal fibroids, although extreme caution is required in attempting to remove them, owing to the proximity of the peritoneum.

Uterine Polypi.

Although the majority of uterine polypi, at least of those of any considerable size, are really special forms of fibro-myoma, forms which bring them under the influence of much more effective means of treatment, it seems to be considered by nearly all writers the best plan for clinical purposes to treat of them separately, but it will clear the ground if we first allude to those forms of polypus which are not fibro-myomata at all. All other kinds might be most properly described under one name, viz., "mucous polypi." Casual variations in their density, and other physical characters, have led to a good deal of special nomenclature, which is very unnecessary, and only confusing to the student or practitioner. The ordinary mucous polypus is small—from the size of a pea to that of a filbert, rarely much exceeding the latter. It contains the glands, connective tissue, epithelium, and sometimes muscular fibre, of the mucous tissue from which it springs. It is nearly always very vascular, and of a bright red colour to the eye. In a few instances I have seen it endowed with some of the acute sensibility of the vascular caruncle of the urethra, which it may closely resemble in appearance. Its favourite situation is just within the os uteri, or it may, though very rarely, grow from the outer wall of the cervix, and a little more commonly, from the mucous wall of the uterine body; it has been detected there when dilatation, and exploration by the finger, have been used for the diagnosis of the cause of uterine hæmorrhage. Its covering partakes of the character of the epithelium of the part from which it springs. Sometimes it contains within itself a hollow cavity, the result of a dilated Nabothian or other uterine gland—the hollow polypus; sometimes there are several hollows in its structure, of similar origin—the channelled polypus; and occasionally it is tougher and larger than usual—the fibro-cellular polypus.

These and other additional names are useless, except for the pathological museum. Wherever it exists, it may be quite harmless. I have often found it by mere accident. But it is much more often the cause of hæmorrhages, totally disproportioned to its size and apparent powers of mischief. It is said to be the polypus itself which bleeds in such cases, but I fancy the source of hæmorrhage must also be, as with the fibromyomata, from the irritated and congested mucous membrane with which it is in contact, especially as the also frequently accompanying leucorrhœal discharge is undoubtedly from this source. Fatal hæmorrhage has occurred in this way, and it was a fatal case of this kind which led Simpson to work out the suggestion of Shakespeare's son-in-law in the shape of the uterine tent. I am not quite certain, however, whether this was not a fibroid polypus. The hæmorrhage, which sometimes closely resembles in periodicity the normal discharge, is apt to be misleading. I had a case of pregnancy at nearly full term sent to me for ovariectomy, in which a small mucous polypus of the cervix had kept up an almost regular menstruation, which had deceived the practitioner, and still more willingly the patient; and I have seen three or four cases where undoubted ovarian tumours had doubts thrown upon their diagnosis, owing to the persistent menorrhagia and metrorrhagia thus caused. Dysmenorrhœa and sterility may be caused by any form of polypus which blocks the outlet or inlet of the uterus. These mucous polypi are often extremely soft, and are thus likely to be overlooked on mere digital examination, even when hanging from the os uteri, by the uninitiated or careless examiner. I have known half a dozen well-advanced students fail thus to detect one as large as a coffee bean. It is very probable that the primary causation of mucous polypi is to be met with in inflammatory degenerations of the uterine mucous membrane, especially of its smaller cysts.

The treatment of mucous polypi may be described in a few words. When discovered in the cervix, or near it, they must be seized with a polypus forceps, with a catch on the handle, and snipped or twisted off. If discovered within the uterus, they must be scraped off with the curette.

Under the title of placental or fibrinous polypi, the retained products of pregnancy and delivery have been described. This is a complete misnomer. Every practitioner ought to be aware that, after abortion or delivery at full time, some decidual or foetal structures may remain, giving rise to hæmorrhages with clots, often more or less attached to the uterine wall, and decolorised by time and pressure. When the history of the case points to these, the uterus must be explored, and these remnants must be removed by ovum forceps or curette, but nothing is gained by calling them polypi. The same remarks apply to those instances where

the dysmenorrhæal membrane, or the decolorised blood-casts of the dysmenorrhæal uterus are met with (p. 181). Larger and somewhat more complicated mucous polypi are described here and there in pathological literature. I have never met with any of them, but their treatment would be precisely similar, unless large enough and firm enough to require the cæraseur.

We return now to the fibro-myoma or fibroid tumour in its polypoid form (figs. 123, 125). Histologically there is nothing more to be said about it. Occasionally it appears to be a true polypus from its earliest stage, and is then usually small; generally it is the more or less slow

protrusion into the uterus of an interstitial growth. It may vary in size from a pea to an adult head.

Its symptoms—hemorrhage, leucorrhœa, pain, and occasionally fetid discharges, dysmenorrhœa, expulsive efforts, supra-pubic swelling, or intra-vaginal protrusion from the uterus, or complete dilatation or thinning of the lower segment—have all been more

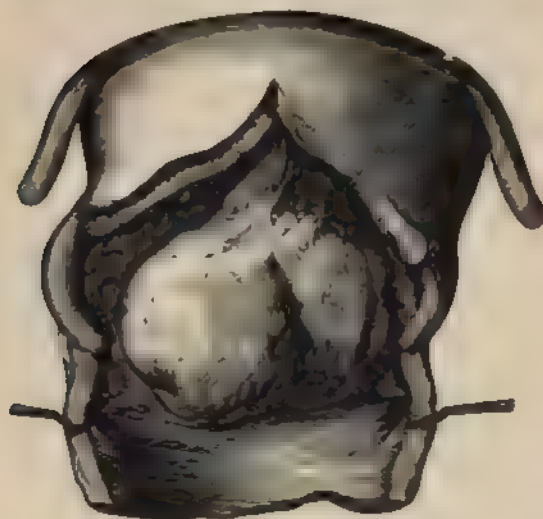


FIG. 125.—Fibroid Polypus of the Uterus
(Churchill et Leblond).

or less indicated above. Diagnosis and treatment alone concern us now.

The *diagnosis* will depend on whether the mass is strictly intra-uterine, or wholly or partially extruded from the os externum. When within the uterus, there are the usual symptoms of sub-mucous fibroid tumours, and the whole question at issue is whether pedunculation has taken place, or to what extent. This, however, is sometimes a very difficult problem. I have known the dangerous and difficult process of enucleation attempted on a tumour which was subsequently shown to be attached to the uterus by a very fine pedicle. Full dilatation of the os, if not naturally induced, is a primary indication. Anæsthesia is often necessary, to enable such an introduction of the hand into the vagina, and of the forefingers into the uterus, as may be required to reach the uterine insertion of the

mass, and ascertain how far it is sessile and broad-based, or how far pedunculated. The sound, especially a flexible one, must aid us when we cannot otherwise reach; but I have found that many very able practitioners are unable, from want of special experience, to estimate the direction which either a firm or a flexible sound is taking if its course be sinuous. I fear it is too often only when attempts to apply an œtuseur are made that a correct conclusion is come to as to whether the tumour has the desirable pear shape, and whether that is such as to compel the œtuseur to slip backwards to the uterine insertion, or forwards off the tumour. The use of two sounds or flexible catheters passed on opposite sides of the growth, and then manœuvred together, is capable of defining very clearly the shape and attachments of the mass, but sometimes the pedicle is excessively short. When the tumour projects through the cervix the diagnosis may be simple enough, or it may still be fraught with difficulty. If the pedicle can be easily reached, and is felt to be decidedly smaller than the mass, and growing from one side of the uterine wall, we have all the diagnostic signs required. To assist in ascertaining these facts, the tumour should be grasped with a vulsellum; and while the digital examination is made with one hand the other should, by the vulsellum, draw down or repress the tumour, as may be found necessary to get the finger past it, or to bring its summit within reach. The uterus should be firmly pressed down into the pelvis by an assistant.

Differentiation between Polypus and Inverted Uterus.—If the polypus is more or less protruded through the cervix, and its narrow pedicle is not very apparent, it is liable to be mistaken for an inverted uterus, and, as this mistake might lead to fatal results, and has been made by men of the highest experience and skill, it should be a rule never, even in the simplest case, to omit to ascertain the diagnostic points which differentiate the two affections. A careful bi-manual examination will tell us whether we have a body corresponding to the uterus, above the line at which the mass leaves the os uteri. If this is clearly the case, the affection cannot be inversion. An examination *per rectum*, aided by abdominal pressure, will bring this out still more clearly, and, if there be the least doubt, a sound passed into the bladder and manœuvred in connection with the finger in the rectum, will confirm the presence or absence of the uninverted uterus. In moderately thin women, the cup-shaped depression felt in complete inversion, instead of the round fundus uteri, can be well made out. The sound is always required to complete the diagnosis, but the previous bi-manual examination guides us much in its use. If there be inversion, the sound will not enter the uterus, or pass any distance beyond the cervical rim, while in the case of a polypus, at some point, if not all round, it will pass the normal distance or upwards.

Adhesions sometimes take place between the polypus and the wall of the uterus, and I have had, from this cause, to divide two distinct and firm pedicles, but I have never known adhesion all round, so as to prevent the passage of the sound at all points. In such a case, the bi-manual examination, and a careful study of the history of the case, pointing to inversion or the reverse, should still suffice to make the case clear. When possible, it is better to take the history as only of secondary diagnostic importance, and to rely on the physical signs alone. The inverted uterus is much more tender than a polypus, and resents the application and tightening of a wire ligature. It is not advisable, however, to reserve the diagnosis till this stage of the proceedings, and the fact even is not universally true. In tolerably recent cases of inversion, the bleeding and congested wall of the uterus is totally different from the smooth pale wall of an ordinary polypus, but this must not be too entirely relied on for diagnosis. If the openings of the Fallopian tubes are visible, they of course settle the question. It is well to bear in mind that a heavy or strongly extruded polypus may invert the uterus partially, or even entirely (*see* Chap. XIII.).

I do not think it necessary to differentiate polypus from prolapsus uteri or elongated cervix. I cannot imagine the most careless bungler mistaking either affection for a polypus.

Treatment.—The treatment of fibroid polypi is invariably by removal, the sole questions being as to time and method. When the pedicle is evidently within reach, the time requires no consideration. The sooner the growth is removed the better. If the examination is a difficult one requiring anaesthetics, it is better to proceed at the same sitting; otherwise, unless the patient is rapidly deteriorating, it is better to wait for the middle of an intermenstrual period. In the case of large polypi with broad pedicles, or only entering on the stage of polypisation, the amount and effect of hæmorrhage will guide us as to the time. If life is daily being imperilled, and the hæmorrhage is little under control, we must proceed, however conscious of the great difficulties before us, but if we are satisfied that we can maintain the patient at her present health standard for a time, or even improve it, then, undoubtedly, it is better to wait until, by the spontaneous uterine contractions, aided by full and frequent administration of ergot, the polypisation can be made more complete.

As to the methods of removal, we have a considerable variety to choose from, but as *ecraseurs* of various kinds are being gradually improved, all other methods are yielding to them. Mere twisting off, by strong forceps, is only applicable to a very small number of true fibroids: the pedicle should not be much thicker than a goose-quill. The long popular plan of passing a whip-cord or other ligature round the pedicle

by two parallel but separable tubes—Gooch's cannulae, then tightening the ligature, and leaving the whole mass to become gangrenous, is deservedly abandoned. Cutting the pedicle by a sharp hook or by scissors is more free from danger of septicæmia, but may cause serious hæmorrhage. Aveling's polyptrite (fig. 126) is a most handy instrument in cases with moderately thick pedicles, say the thickness of the thumb, but which are large enough otherwise to make the passage of a wire ligature difficult. The hollow hook is guided round the pedicle, and the straight bar is easily screwed up so as to make a completely bloodless amputation. The instrument should, however, be made more carefully, and of better metal than is usual, otherwise the cutting bar is liable to be laterally deflected, and to catch on one side of the hollow hook after it has cut through the bulk of the pedicle. When this occurs, as it has occasionally done with me, I have been obliged to use the whole instrument as a powerful but clumsy torsion agent, to complete the separation. The *écraseur* is undoubtedly our sheet anchor in all difficult cases of polypus. As the galvano-cautery instruments are gradually improved, this form will probably take



FIG. 126.—Aveling's Polyptrite, with slight modification of the Screw.

precedence of all others. Meanwhile I have great hesitation in passing soft, fragile platinum wires beyond my reach, and of course beyond my digital control when in action, up to the fundus uteri, and in working with them, while I have no absolute certainty as to their steady and continuous action after they are imbedded in the tumour. The chain *écraseur* (fig. 54) is the most powerful; if one has it once passed round the tumour, and on to something like a definite pedicle, it is bound to go through. But its limpness, and the tendency of its links to become entangled, are great drawbacks to its introduction. On the whole, I believe that at the present time the surest method of removal of intra-uterine fibroid polypus is by the common wire *écraseur*. A strong, thick, well-annealed, and therefore flexible, steel wire is for most cases the best. For further remarks on the various *écraseurs* the reader is, however, referred to Chap. III., p. 73 *et seq.* There are cases in which we feel convinced of the existence of a distinct pedicle, and yet in which the tumour is so large, or the pedicle so short, that no ordinary *écraseur* can be passed over the mass. If we cannot allow for

the element of time, and feel that we must at once interfere, there is nothing for it but to diminish the size of the polypus. We must take the risks of the hæmorrhage and septicæmia involved. If an ætiseur can in any way be made to bite on any portion of it, that portion must be removed. If this cannot be done, then, seizing the lower end by a strong vulsellum, we must, by knife or scissors, excise as much as possible, controlling the hæmorrhage by styptic plugs, and trusting by ergot to induce further extrusion at the next sitting. Although I have succeeded in this way in finally getting at the pedicle of a large intra-uterine fibroid polypus, and ultimately removing the whole of it with safety, I feel much sympathy for any one who may be placed in the same circumstances.

Fibro-cystic Tumours of the Uterus.

The chief interest of the so-called "fibro-cystic" tumours (fig. 122) of the uterus lies in the fact that, although rare in this country, they have often served as pitfalls for the ovariologist. Given a large and rapidly increasing abdominal tumour, springing from the pelvis, and containing within it evident cystic cavities, the chances are so strongly in favour of its being an ovarian tumour, and so slightly in favour of its being uterine, that, in spite of many doubtful indications, few ovariologists of note have not at one time or other been led to enter on an operation for the removal of the former, and found that they must either abandon the operation or proceed to extirpation of the uterus with the latter. Such a thing as a true fibro-cystic uterine tumour, that is, a tumour partly fibro-myomatous and partly consisting of cysts with membranous cyst walls, does not exist. Schröder certainly mentions a few rare instances of dermoid or apoplectic cysts of the uterus, and abscess, with a kind of cyst wall, has not infrequently been met with, but I am not aware that the former of these has ever been encountered along with or within fibroid tumours. But undoubtedly the fibro-myoma is occasionally liable to infiltration within its walls, which may be only temporary or may assume a permanent form. It is doubtful as yet how far the dilatation of the lymphatic channels contributes to this pseudo-cyst formation. Be that as it may, it is certain that occasionally, though rarely, we find accumulations of fluid within the meshes of a fibroid, which render its diagnosis from ovarian tumours very difficult. In such cases the general symptoms and signs, the menorrhagia, elongated uterine cavity, &c., will most probably be those of uterine growths, but the presence of the cystic phenomena, so rare in fibroids and so common in ovarian tumours, would incline the balance of opinion in favour of the latter, if we had not,

in all doubtful cases, the means of examining the nature of the contained fluid removed by aspiration. In these doubtful tumours, it is, I think, imperative to have recourse to the aspirator. The question then remains, Have we any certain means of ascertaining by physical appearance, or by chemical or microscopic tests, the difference between ovarian and fibro-cystic fluids? We shall mention shortly what is known as to the former, especially the common, if not constant, presence of certain granular cells with definite reaction under chemical reagents, and of columnar epithelium, but for the present the following summary from Garrigues (*Am. Jour. of Obst.*, 1882, July, p. 682), may be considered as the most recent information as to the character of fibro-cystic fluids:—

“All cases in which a sufficiently large quantity of fluid was withdrawn, and coagulated spontaneously, promptly, and completely, have proved to be fibro-cysts of the uterus, but coagulation takes place only in the fluid from a minority of fibro-cysts. The presence of a fluid which, after a long exposure to the air, precipitates fibrinous clouds, or which gelatinises on addition of blood or serum, does not prove that it comes from a fibro-cyst. Atlee's fibro-cell is not always found in uterine fibro-cysts, and may be present in ovarian cysts. None of the other microscopical elements, more or less changed epithelial cells, found in uterine cysts, have any diagnostic value. Columnar epithelium cells are never found in uterine cysts.”

The fluid when first aspirated is usually of a clear yellowish character, and is free from paralbumen. Should a tumour not be clearly separable from the uterus, and should its fluid present the above-named characteristics, it may with almost absolute certainty be diagnosed as non-ovarian. In ovarian tumours the uterus is usually depressed forwards or backwards, and with a fibroid or fibro-cystic one it is usually dragged upwards and elongated, but these signs are not to be absolutely relied on, and the examination of the fluid is of great importance.

Supposing that we thus feel fairly certain of the fibro-cystic uterine growth, its *treatment* will not vary in principle from that of a simple fibroid. It is generally subserous, and interference in any form will depend on the gravity of the pressure, hæmorrhage, or other symptoms. If removal be decided on, it will almost certainly involve that of the uterus itself. The effect of removal of the ovaries on such a tumour is not yet sufficiently worked out, but a few cases are already recorded which tend to show that these fibro-cysts may be amenable to the same laws that govern the pure fibroids in this respect. As a rule, the administration of ergot produces, at least temporarily, a marked diminution in the size of these tumours, acting probably in the same manner as upon solid fibroids temporarily infiltrated with serum.

CHAPTER XI.

DISEASES OF THE UTERUS—*continued*. Uterine Displacements. Their General Mode of Causation. Prolapse of the Uterus and Vagina. Pseudo-prolapse Elevation of the Uterus. Forward Displacements, Antelexion and Anteversion Backward Displacements, Retroflexion and Retroversion. Mobile Uterus Lateral Displacements.

HAVING now considered most of the affections which tend to increase the weight of the uterus, and many of those which cause relaxation of its supports, we are in a position to take up those alterations in its position which are so frequent a result of undue weight or faulty support, and which often demand the patient care of the practitioner. The uterus may be depressed downwards—*prolapse*; or it may be dragged upwards—*elevation*, or it may be tilted backwards—*retroversion*, or forwards—*anteversion*; or laterally—*lateroversion*; or it may be bent on itself like a retort, backwards, forwards, or laterally—*retroflexion*, *antelexion*, and *lateroflexion*. All these abnormal states will require notice, and in connection with the first—*prolapse*—it is impossible to dissociate the similar affection of the vaginal walls.

General Causation of Uterine Displacements.

Setting aside any original or congenital tendency which may exist towards these affections, as for instance towards antelexion in the case of infantile uterus, there are certain causes which, singly or in combination, tend to the production of all forms of displacement; and it will save considerable time, and I think promote clearer views, if we enumerate these causes now, referring again to them individually, in connection with each separate displacement, when they play a more than usually important rôle. To have a firm grasp of this general or possible causation is the only sure way to understand any individual case, or to apply any rational treatment. I will not enter into the controversy—now surely dying out—between what may be called the mechanical and the vital schools of opinion and practice in relation to uterine displacements. Now and again it will happen that we cannot, without much pain and injury, do anything to replace, or to mechanically retain in position, a dis

placed uterus, until we have removed or greatly mitigated the cause, and altered the general health. On the other hand, it will often happen that all attempts to remove the cause will fail until we remove the version, flexion, or prolapse; the cause and the effect have become interchangeable and mutually injurious. In the majority of cases we shall have carefully to feel our way while endeavouring to fulfil both indications at once. A congested and displaced uterus often requires to be kept in position, to remove its congestion, and a prolapsed or retroverted uterus cannot long be kept comfortably in position if we neglect to remove its congested state. The student will find this whole subject exhaustively treated, from opposite points of view, in a series of articles by Hermann and by Graily Hewitt in the *Lancet*, extending over the later weeks of 1884 and the earlier ones of 1885.

THE CAUSES OF UTERINE DISPLACEMENT may be grouped as follows:—

- I. Whatever increases the weight of the uterus.
- II. Whatever diminishes the uterine supports.
- III. Any undue pressure from above.
- IV. Any undue traction from below.

The form which the displacement takes will depend on the direction of the pressure or traction, and on the site of the increased weight or diminished support. In detailing these points more fully, we shall now, fortunately, be referring, for the most part, to pathological conditions already described, instead of being obliged, as hitherto, to frequently refer to facts which had still to be considered.

Under Class I. we may have the following—

1. **Chronic Hypertrophy of the Uterus**, with more or less constantly active or passive hyperæmia. This is the most common cause of all in the married, taking displacements as a whole; in the virgin it is more often a result. It includes chronic metritis and subinvolution. When mainly corporeal, its first tendency is to version rather than prolapse. When mainly cervical, its tendency is to prolapse rather than version.

2. **Tumours of the Uterus**, especially fibro-myomata. The influence of small fibroids in the anterior or posterior wall of the fundus towards producing versions must be manifest; that of tumours which do not materially destroy the balance is, of course, towards the production of prolapse, although, as we have seen, this is most frequently counteracted by other circumstances, in the case of large fibroids. The condition of incarceration in the pelvis greatly increases the pressure in any direction.

3. **Pregnancy**, if too frequent, or if accompanied by unaccustomed exertion, or if followed by subinvolution, or if recumbency be neglected while involution is going on, has a constant tendency to become the pre

disposing or exciting cause of displacements. The neglect of the involution period after abortion does so still more.

4. Menstrual Engorgement.—This factor acts in two ways. Either, from the various conditions which have been mentioned as giving rise to menorrhagia and dysmenorrhœa, the uterus is periodically heavier than normal at these times, while perhaps no special precautions are taken; or if menstruation at first be normal, the patient, in the case especially of shopwomen or others laboriously employed, is compelled to stand at these periods for many continuous hours, or to exert great muscular force. Depression of the uterus follows and leads to engorgement, and in its turn, engorgement leads to further displacement. In all the above cases the part played by congestion or hyperæmia is evident, while the tendency to increase of congestion by the altered position of the uterus is not less so.

Under Class II. we have the following

5. Ruptured Perineum.—The bearing of this on uterine prolapse has been much disputed. It is quite true that the perineum in no way directly supports the uterus, unless there be already prolapse, but its extensive rupture, as has already been shown, allows of prolapse of the vaginal walls, and these, in their turn, fail to support the bladder and rectum, and ultimately drag down the uterus. It is for this reason that a primary operation for torn perineum is so essential as a preventive, and a secondary one is often so ineffectual as a cure for prolapse.

6. Destruction of the Pelvic Fascia, of that portion which is attached to the coccyx behind, to the pubic arch in front, and to the tubera ischia laterally.—The importance of this lesion is only beginning to be fully understood, but, as stated at page 71, its estimation may probably lead to modifications in the secondary operation for ruptured perineum.

7. Relaxed Vagina.—The vagina is supposed by many to act as an actual support of the uterus, a sort of hollow muscular pillar. This is disputed by others, and I must confess myself unable to see very clearly how it can act thus, but of the clinical fact that chronic leucorrhœa, and other causes which tend to soften, and stretch, and diminish the muscular tone of the vagina (whether we regard it as a muscular tube, or as merely a horizontal slit), are most apt to be followed by uterine displacement, I feel no manner of doubt.

8. Stretching of the Uterine Ligaments.—We are here again on controversial ground. The uterine ligaments are—(a) The broad ligaments or lateral peritoneal folds. Their influence as regards its descent may be doubtful, until it becomes very low, but they must have some constant effect on its forward or backward depression. (b) The round ligaments. These are so rudimentary in character that I can well believe they have less effect in health or disease than was formerly supposed, although we shall, by and

by, see that artificial shortening of them has some influence at any rate on the cure of retroversion and prolapse. (c) The utero-sacral bands. These bound Douglas's pouch on either side, and occasionally are strong enough to catch the already retroverted uterus, and hold it down between their folds. It would seem to me that they must have a decided effect in supporting the uterus. (d) The utero-vesical folds. These are more feeble, and, having their attachment to the bladder in front, are liable to constant change. On the whole, there is some ground for the diminished importance as supports attached by many recent writers to the vagina and uterine ligaments. Yet the uterus does not rest like a log on the pelvic floor, which is so admirably adapted to expedite the expulsion of the foetus. Although these supports are slighter and more easily overcome than was formerly believed, they are supports, and interference with them is an important link in a chain of untoward events.

9. The Absorption of the Pelvic Fat and Connective Tissue.—In old age, or under other circumstances, this tends materially to permit of uterine descent, especially if the organ is over-weighted; and too little importance has, I think, hitherto been attached to the support afforded by the vascular and semi-erectile element, and also by the few muscular fibres, contained in the connective tissues.

Under Class III. we have—

10. Great Muscular Efforts of any kind. Their influence is obvious. Graily Hewitt traces 43 per cent. of displacements in unmarried or sterile women to such causes.

11. Tight Clothing.—This, however slow, is certain in action, depressing the pelvic contents, stretching all supports, and causing pelvic congestion, and consequent uterine weight.

12. Abdominal Growths or Exudations.—This section includes such factors as ascites when extensive, abdominal tumours of every kind, and ovarian tumours when they have passed above the brim and overlapped the uterus. It depends on other circumstances whether they merely protrude the uterus downwards, or press it forwards or backwards. The effect of exudation of blood or lymph, afterwards to be described under pelvic hæmatocele or inflammation, is to displace the uterus in various ways, but also to fix it there, and prevent further displacement; very many cases of displacement are, I believe, due to the effect of former attacks of para-metritis, which may have escaped notice at the time.

13. Frequent Distention of the Rectum, Sigmoid Flexure, or Bladder.—Whether these are owing to the atonicity of the organs, or to the difficulties which modesty often imposes on women, the result is the same. The effect is usually chronic and persistent, but may occasionally be traced to one special occasion. The effect of a repeatedly over-filled

bladder in promoting backward displacement of the uterus requires hardly any explanation.

14. Chronic Cough.—This, especially in the aged, has often no mean share, if not in originating, at any rate in increasing displacement, in whatever direction it may have occurred.

15. Sudden Falls.—These are very frequently the apparent originators of displacement, especially of retroversions. In unmarried women, especially, a few questions will often elicit, in otherwise inexplicable cases of retroversion, a history of a fall from a horse or conveyance, or in skating.

Under Class IV. we may enumerate—

16. Prolapse of the Vagina.—leading to traction upon the uterus, by the vesical or rectal distention of the prolapsed wall.

17. Contracted Lymph. the ultimate result of inflammatory exudations.—This may drag the fundus laterally or otherwise, while the cervix may have been pushed and fixed in quite an opposite direction (*see* peri-metritis, &c., Chap. XIX.).

18. Uterine Polypi.—These tend, when within the uterus, to increase its weight, and, when extruded from it, to drag it downwards.

19. Hypertrophy of the Cervix.—This may be so great as to act in a similar manner. As we shall see, however, it may, by its growth, only simulate descent, the fundus remaining at or about its normal level (*see* Pseudo-prolapse).

20. Operations on the Uterus.—These must, I fear, be increasingly added to the causes of, at any rate, downward displacement. While freely admitting the boon which has been conferred on gynecology by the introduction of the duck-bill speculum, with its accompanying facilities or necessity for drawing down the uterus by hooklets, I must once more earnestly protest against the increasing tendency to make use of such proceedings on all occasions. For frequent and simple inspections of the os, the application of ordinary remedies, the passage of a sound under ordinary circumstances, and the like proceedings, no one is justified in dragging the uterus about in this way, and it must be a matter of thankfulness that the ordinary practitioner is prevented, by want of sufficient assistance, from copying the example of some of our experts.

We come now to the consideration of the particular forms of displacement, and as I have given the etiology of these in general terms, so we shall find it a matter of practical convenience to mention under a separate section the various mechanical supports which have been devised for their remedy (Chap. XII.).

Prolapsus Uteri.

This term signifies descent of the organ. It may be described as partial, when the uterus is still grasped by, and is still within the vagina, or complete, when it has wholly or largely escaped beyond the sphincter vaginæ. Other subdivisions are inadvisable, being liable to misconception, through the dissimilar use of similar terms by various writers; thus the term "procenturia" has been used by some as synonymous with prolapse, by others as expressing an inferior, and by others a superior degree of the affection.

Causes.—Almost every etiological condition given above may lead to prolapsus uteri, and few cases exist where several of these factors do not co-exist; but if I must emphasize the relative frequency with which they may be credited, I would say—(1) that the most common, though by no means an absolutely constant factor, is the dragging produced by pre-existing prolapse of the vaginal walls; (2) that relaxation of the natural supports plays the next most important part, whether this is to a certain extent congenital, or produced by the various means described above; and (3) I would attach a somewhat subsidiary importance, though it is seldom entirely absent, to the effects of increased weight or pressure, at any rate at the commencement; all these conditions are most frequently the result of parturition.

Physical Appearances. Swelling of the organ takes place ere long, owing to the passive hyperæmia caused by its position; and hypertrophy, quite similar to that of chronic inflammation, both lengthens the cavity and destroys the typical pearshape. This, together with the thickening of the inverted vaginal wall, gives to the protruded organ a bulbous appearance, at the lower end of which lies the more or less patent os. The inverted vagina, besides being thickened, has its rugæ stretched and smoothed out, and, by and by, the epithelium, in contact with the air and with the neighbouring thighs, assumes the form of epidermis. Ulcerations, formerly described (p. 231), are frequently caused, which look very formidable, owing to their size and thickened edges (fig. 111), but fortunately these heal rapidly when the hyperæmia, due to position and to the effects of friction, is obviated. Remembering the attachments of neighbouring organs, it will be evident, that when the uterus is fully prolapsed, the bladder will be dragged down somewhat over its anterior surface; behind it there will also lie a pouch of the rectum, and at a higher level, the stretched and elongated peritoneal pouch of Douglas, and within that, coils of intestine may settle, adding to the size and irreducibility of the mass. A slight degree of prolapse is doubtless very common, giving rise to only

a limited amount of discomfort, and being difficult to ascertain with absolute certainty. Any of the ordinary causes may be at work for many years, but not in sufficient force or in sufficient combination to produce more than this trivial effect, until some sudden impetus is given. In all cases of hyperemic affection of the uterus we occasionally find, empirically, that a very little temporary mechanical support leads to the abrogation of the more distressing symptoms, and this is doubtless due to the relief of slight prolapse. The mode in which the graver forms of prolapse gradually take place is not always similar, and depends on the kind of causation. Very rarely, indeed, does the uterus drop straight

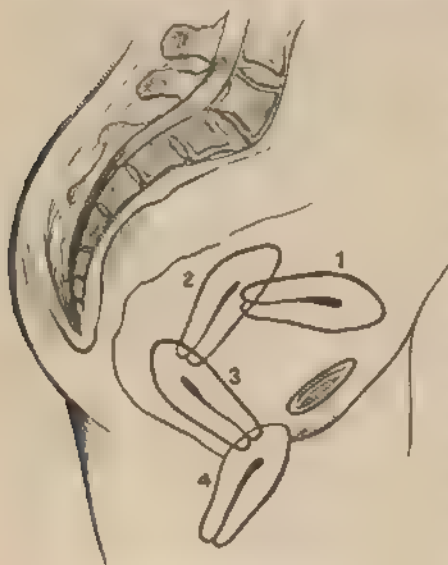


FIG. 127.—Stages of Prolapsus Uteri in ordinary cases.

downwards, retaining its normal inclination, but it usually follows the typical axis of the pelvis—the successive axes of the brim, cavity, and outlet (fig. 127). After complete protrusion the cervix again points distinctly downwards or even backwards. It is not very difficult to understand how a primarily heavy fundus uteri may originate, increase, or perpetuate any of these stages (fig. 128), or how a weighty cervix may tend to make them less apparent, or how the primary descent of the anterior or posterior vaginal walls, respectively, may render anteversion or retroversion of the uterus

more prominent at the commencement. The general tendency is towards the changes in uterine position during descent, which I have diagrammatically indicated above.

The symptoms are the usual gynaecological ones of pelvic weight and dragging, and lumbar pain, with discomfort in, or interference with, the functions of the rectum and bladder or lower limbs (uterine lameness). In severe cases, the bladder cannot be thoroughly emptied unless after replacement, and the urine may thus become ammoniacal, or purulent. In a few instances gangrene has occurred, with sloughing of portions or of the whole of the uterus. More or less chronic vaginitis is common, leading to leucorrhœa and to abrasions, or to adhesions which

prevent replacement. Menstruation may be quite normal. The appearance of an external protrusion may be gradual or may occur suddenly owing to some undue exertion, the patient attributing the whole affection to this cause.

Diagnosis may be difficult in slight or incomplete prolapse. The symptoms just mentioned, and the relaxed walls of the vagina, together perhaps with a history of occasional former protrusions, are generally, however, quite sufficient to ensure the requisite treatment. Causing the patient to cough or bear down forcibly, or even to stand up while doing so, will, if necessary, ensure certainty. The affection, when complete, can hardly be mistaken for anything but the following:—(1) Simple vaginal prolapse; (2) pseudo-prolapse of the uterus, (3) inversion; and (4) polypus of the uterus. The first of these can only be differentiated by securing the fullest amount of protrusion possible, and then ascertaining the position of the uterus. It will still always be difficult to say that some amount of uterine falling does not exist, unless that organ is fixed by adhesions, an occurrence not very common when vaginal protrusion exists. Pseudo-prolapse, or that state where, the fundus uteri remaining at or about its normal level, hypertrophy of the cervix gives rise to an appearance of prolapse, will be discussed a little further on. Inversion of the uterus has a history of acute origin, generally after labour, and of continuous and exhausting hæmorrhages, totally foreign to uncomplicated prolapse (see Chap. XIII). Polypi have also their special history of hæmorrhage and expulsive pain, but in neither case should a proper manipulation and attempt at reduction allow of any difficulty in diagnosis. The absence of the os uteri at the lower end in either case, the character of the mucous covering, and perhaps the discovery of the Fallopian orifices in inversion, the firm cervical ring embracing the pedicle of a polypus, and generally that of an inversion—these points should remove all doubts that could possibly arise. Mistakes here would show unpardonable carelessness rather than the presence of diagnostic difficulties.

Treatment. The treatment of prolapse, when there is external protrusion, always demands, in the first place, its reposition by taxis. In ordinary cases this is easy enough, remembering, if the prolapse is large, the



FIG. 128.—Prolapsed Uteri, with persistent Retroflexion (Schlosser).

pelvic axis. When the vagina is much everted, and bulges distinctly in front of and behind the uterus, the vesical portion should be first repressed, then the uterus, then the rectal portion. It is in this order that descent commonly occurs, but although this is correct in theory, and for the most part in practice, it will sometimes answer best to repress the uterus first. A very few cases are met with, where adhesions of the vaginal walls or of the prolapsed peritoneal pouch render replacement impossible. In such cases the practitioner would have to exercise his ingenuity, as in large irreducible hernia, in inventing the most suitable kind of bag truss. But pressure will nearly always succeed. The weight of the uterus may be reduced by prolonged rest, by application of cold, by scarification, and by compression of the lower end, as in phimosis. The pressure of the loaded rectum or bladder must be taken off by enemata and catheterisation. In the event of pregnancy, premature labour will seldom be required, and in the much rarer event of a large dependent polypoid growth coexisting with prolapse, this must be primarily treated. Taxis having thus succeeded, recumbency, with well raised pelvis, should be maintained for some time, and any tendency to cough should if possible be obviated. Ulcerations will quickly heal in this way, also much of the uterine engorgement passes quickly away. The next question to determine is what means are to be taken to keep the uterus in position. In the case of comparatively young women, who are sufficiently well circumstanced to allow of continuous rest, an attempt should always be made to accomplish this without mechanical supports. For this purpose powerful astringent injections of alum, sulphate of zinc, or the like, as mentioned under chronic vaginitis, are the most suitable agents. We are now and then rewarded for a few weeks' treatment of this kind by permanent results. Cotton or tenax plugs saturated with the glycerole of tannin, or vinegar or other astringents applied by a piece of sponge, left for several hours at a time, or medicated vaginal suppositories of tannin or other astringents may be tried, if the vagina does not too much resent them. While this is going on, every means should be taken to improve the general health and to promote diminution in the size of the uterus, especially by using glycerine in connection with the astringent remedies, and by the frequent use of Emmet's hot-water treatment. If, after a fair trial of these means, the result is not satisfactory, and prolapse still occurs, or in cases of old standing, or, unfortunately, in most poor women who have to earn their livelihood, artificial support must be used. The kind of pessaries most suitable will be discussed in the next chapter, along with those required for other displacements. In those cases where pessaries fail, either because they cannot be borne, or because they are insufficient to keep up the tumour, or when the patient, for various reasons, elects to try some more effective

means of repression than the constant use of a pessary, there are surgical means still at our disposal.

The repair of an obliterated perineum might at first strike one as the most useful procedure of this kind; but experience shows that it is useless to hope for great results from the secondary operation, after prolapse has occurred to any great degree. The perineum alone, whether it is normally whole or has been so made by stitching, cannot long support a superincumbent uterus. The operation at the time of rupture, or before prolapse has commenced, is invaluable, but subsequently it seems only to give a little firmer footing to certain kinds of pessary, and that for but a short time. The only hope derivable from the secondary

operation is when it is performed fairly early, or when not only the perineum but a good portion of the posterior vaginal wall is included in the freshening process. Narrowing of the vaginal wall, by creating raw surfaces and bringing them together, has been tried in all manner of ways. Powerful caustics used for this purpose are, I believe, abandoned, their action being uncertain and dangerous. One cannot sufficiently wonder at the boldness and novelty of the suggestion to produce gonorrhoea artificially, with this end in view. Considering the number of ordinary cases of gonorrhoea where adhesion does not occur, and the whole moral and physical aspects of the proposal, Dr Chippenale cer-

tainly bears away the palm for an original, though unreliable, suggestion. Many of our more eminent gynaecological surgeons have vied with each other in inventing different modes of bringing about vaginal contraction. Some have proposed operating on the posterior vaginal wall; others, and those the more recent, have, following the suggestions of Marshall Hall, preferred the anterior. A large triangular surface with its base above is generally acted upon. Some, like Sims, pare only its two converging limbs (fig. 129), leaving, when these are brought together, a pouch above. Others, like Emmet, consider this pouch objectionable, and pare a margin round the whole triangle (fig. 130). Others again, like Schröder, freshen the whole surface, and are not quite so particular as to its triangular form. Many other modifications are suggested. Le

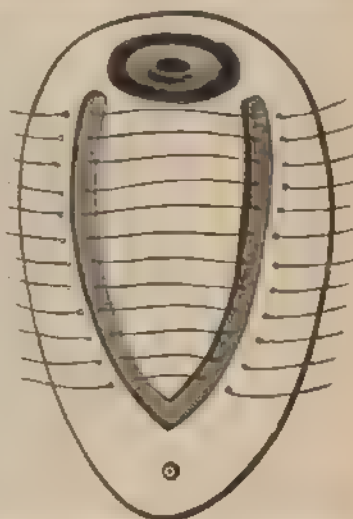


FIG. 129. Sims's Operation for Diminishing the Vaginal Calibre, Elytrography (after Thomas).

Fort suggests the freshening of a strip on both anterior and posterior vaginal walls, and their union so as to form a double vagina. Gut sutures, which do not require removal, would be most satisfactory for this purpose. It is not my purpose to describe the details of these operations. They will always be confined to the surgeon who has a special predilection for, or skill in, such procedures. When carefully performed they undoubtedly afford temporary relief in that limited number of cases where pessaries fail, and they greatly increase one's admiration of the skill of the operator,—of their permanent result the less said the better. Complete closure of the vagina, at or near its outlet, with the exception of a small aperture in front, offers, in the case of old women,



FIG. 130. Ennis's Operation of Hysteropexy after Thomas.

a better chance of permanent retention of the uterus, and the higher the closure can be carried the longer will the support last. Canova of Milan makes a suggestion which may possibly turn out to be fruitful. The English student will find the necessary reference to it at page 23, vol. i., of the *Lancet* for 1883. He proposes, without opening the peritoneum, to unite the peritoneal covering of the uterus, which is held up by an intra uterine sound, to the layer covering the anterior abdominal wall. The facility with which peritoneal surfaces unite is notorious, and various modes of keeping them temporarily together by stitches will suggest themselves to any one accustomed to abdominal surgery; the difficulties involved in the danger of speedy stretching of these

adhesions, in the possible interference with the bladder, and in the derangement of uterine function, if the operation is performed early in life, are no less manifest. The operation of Alexander for retroversion and retroflexion (*see page 317*) will probably prove to be a safer and more certain means of treating some cases of prolapse than this.

Having thus considered the condition of prolapsus uteri, we should still devote a few words to prolapse of the vagina alone, and to that condition which we have considered to be best described by the term, "pseudo-prolapse" of the uterus.

Prolapsus Vaginæ.

Prolapse of the vagina, especially of its anterior wall, is, as has been seen, very frequently the precursor of uterine prolapse. It is seldom that anterior prolapse, or *cystocele*, as it is termed, from its relation to the bladder, exists long without dragging the uterus down to some extent, but cases do occur in which the latter organ seems to be in no way affected. Posterior prolapse *rectocele*—is most frequently a secondary occurrence to the anterior form, with or without uterine affection, but from constant overloading of the bowel, combined with diminished power in the perineum, it may occur alone, leaving the uterus completely unaffected. In this form of posterior prolapse the rectum only may be involved, or the dragging upon that part of the pelvic contents may be so great as to draw down and greatly stretch Douglas's peritoneal pouch, which also may contain within it a mass of intestinal folds. The bulky swelling thus caused is termed an *enterocele*.

Among the general *causes* of misplacements mentioned above, the most important here are the weakening of the vaginal walls themselves, caused by pregnancy and labour, by deficient involution of the whole structures after the latter, by chronic catarrh of the passages, or by senile absorption of fat. The influence of frequent long retention of the contents of the bladder and rectum, and, above all, the want of support involved by the total or partial destruction of the perineum, play no mean part.

The *symptoms* are only varied from those of prolapsus uteri by the greater or less prominence of those referring to the bladder or rectum.

Treatment.—As regards treatment, rest and recumbency, astringent lotions or pessaries, and careful attention to the wants of nature, will often do much, as in uterine prolapse. The restitution of the perineum is more likely to prove permanently useful than when the uterus is involved, and the same remark applies to operations for narrowing or occluding the vaginal canal. The more appropriate pessaries or supports will be alluded to below.

Uterine Pseudo-Prolapse.

I have ventured to give this name to a condition which by some is included in the term uterine prolapse, while by most recent writers it is described and distinguished as a totally different affection. In a sense both are right. It is a prolapse of at any rate a portion of the uterus, of its lower extremity, and it does not necessarily involve a prolapse of its fundus or body, that portion remaining at or about its normal level. It is, however, of considerable importance to differentiate between true and pseudo prolapse, especially when operative interference is required. The explanation of this somewhat paradoxical state of matters is simple enough. In certain cases, as we already know, the cervix is enormously enlarged and elongated, while the body may be little if at all affected

(*intra vaginal hypertrophy*). If the uterus as a whole is thus lengthened, its cervix may prolapse alone, or only partially draw down the body. This hypertrophy or elongation of the cervix may, as we have also seen, be confined to that portion which is below the vaginal reflexion (fig. 131). It is for the most part a true hypertrophy, although often a product of metritis, and may, in a modified form, be congenital.



FIG. 131. Hypertrophy of the Intra Vaginal Cervix, with Pseudo-Prolapse of the Uterus (Schroeder).

The *diagnosis* of this form of hypertrophy, as regards its differentiation from true prolapse, should not be difficult. If the whole organ be pushed up to its full height, without force, the protrusion of the cervix into the vaginal canal will be quite evident, and the sound will show

the increased total uterine length, while it will be evident that most of this can be accounted for by the elongated cervix alone.

Treatment.—Pessaries are usually, under these circumstances, of little avail, but one or two forms will be mentioned which may in the slighter cases give relief. Surgical interference is generally required, either on account of dysmenorrhœa or of interference with the marriage relations. We have already (p. 234) described the forms and methods of amputation required, and expressed an opinion as to their occasional advisability. If Pullen's views and practice there described should generally commend themselves, we presume that they will be carried out before the stage of external protrusion has been reached, in fact, if he is

right in supposing that there is often no real elongation of the cervix, but only a wrong vaginal implantation upon it, there is no reason why we should then speak of pseudo-prolapse at all. Under such circumstances there might be true prolapse, partially remediable by his special operation.

In certain cases, however, uterine hypertrophy is now well known to confine itself neither to the intra-vaginal cervix nor to the body of the organ, but mainly to that portion of the cervix which lies above the vaginal reflection (*supra-vaginal hypertrophy*). The result of such a state of matters will also, if extreme, be to produce pseudo-prolapse,—prolapse of the external os without lowering of the fundus to any great degree (fig. 120). There are various explanations of this form of hypertrophy, the simplest, of course, being an appeal to the fact that hypertrophy is sometimes confined to the body, sometimes to the intra-vaginal cervix; and the inference being that there is, therefore, no reason why the intermediate portion should not sometimes be also chiefly affected. But there is every reason to believe that mere stretching of the organ from some cause, with or without hypertrophy, may give rise to pseudo-prolapse. Prolapse of the bladder with its vaginal covering tends to produce prolapse of the uterus also; but if the body is well held in place, either by its ligaments or by any adhesions, the traction may act mainly on the cervix, and thus become one cause of stretching. Galabin points out another, in the grasp which the vulva may take of the cervix when suddenly extruded, seizing and partially strangling it, and acting against the elastic ligaments and attachments of the uterus. This cause can, however, act but seldom, as in so many cases we have a ruptured perineum, and these sudden stretchings would require to be very frequently repeated.

Diagnosis.—The diagnosis of this form of pseudo-prolapse is more difficult than when it is dependent on intra-vaginal lengthening of the cervix. The sound can seldom indicate, in such cases, the boundary line between cervix and body, and rectal or bi-manual examination is not much more clearly indicative of it. I should not be prepared to pronounce further in the way of diagnosis than by stating that, if the sound shows considerable elongation of the whole uterus,—say to four inches,—if the intra-vaginal cervix is not notably elongated, and if bi-manual examination shows no great circumferential enlargement of the body, while the os externum lies on the perineum or protrudes outside the vulva, it is almost certainly the supra-vaginal cervix which is elongated by local hypertrophy or by stretching, and the case is one of pseudo-prolapse.

Treatment.—Pessaries can do for this affection an amount of service, intermediate between that which they do for true prolapse and for the intra-vaginal pseudo-prolapse. As regards operative relief, I confess that,

with the difficulty of diagnosis in view, and with a knowledge of how the bladder in front, and the peritoneum behind, may dip down



FIG. 132.—V-shaped Incision for Removal of Cancer of the Cervix. Schroeder's case, as uteri internum.

along with the hypertrophied supra-vaginal cervix, I must decline to recommend for frequent adoption any form of amputation which takes account of any portion of the cervix except that which is clearly intra-vaginal; although it is certainly possible, with great care, by means of V-shaped incisions (fig. 132), to remove a portion of the supra-vaginal portion, as is done for the removal of epithelioma. I should generally pre-

fer to treat the case as one of ordinary prolapse, trusting to medicinal means or to the lifting up of the uterus, to remove the hyperæmia, or stretching, or whatever it may be, which is inducing this particular condition.

Elevation of the Uterus.

This displacement may be dismissed with a sentence or two. It occurs in the case of pregnancy after the first three months, and of certain large fibroids, or when the uterus is dragged up by ovarian or other tumours, or when it is pushed up by tumours below it. It may also be dragged up by abdominal adhesions, or pushed up by exudations in the pelvis. In all such cases it is the causative disease which requires consideration, not the secondary condition of elevated uterus.

Versions and Flexions of the Uterus.

Preliminary Remarks.—Before speaking of the anterior, posterior, or other versions of the uterus, it will be well to clear the ground by a few observations. In the first place, it should be noted that the term displacement would cover something more than version or flexion. The whole uterus may be pushed or drawn backwards, forwards, or sideways without any disturbance of the angle at which it lies to the horizon or to the plane of the pelvic brim, or without any bending of its separate

portions upon one another. In this case we have displacement certainly, but not version or flexion, according to their ordinary definition. There are no special English terms for this kind of displacements, and we may, once for all, summarily dismiss them with almost the same sentences that we have devoted to uterine elevation. Tumours or exudations outside the uterus, or growing from its own walls, may push it, or contracting adhesions may drag it, in various directions. In all such cases it is the pushing or pulling agent which alone demands attention and treatment. We must seek to remove, if we can, the tumour, or exudation, or adhesion.

By *version* of the uterus (fig. 133, No. 2) we indicate a species of dislocation, by *flexion* (fig. 133, No. 4) rather a species of deformity, with or without dislocation. In version the fundus is directed abnormally from its usual position (fig. 134, No. 2), causing the axis of the whole uterine canal to be changed, while it retains its normal and almost straight direction, and the cervix accordingly points in the opposite direction to the fundus. We may, for practical purposes, disregard the very slight curve of the canal forwards which is found in the normal condition. In flexion, on the other hand, the fundus or upper part of the uterus is unduly bent forwards, backwards, or laterally, while the cervix or lower portion either retains its natural position (fig. 133, No. 3), or bends in the same direction as the upper portion (fig. 133, No. 4), or points in the opposite direction (fig. 133, No. 5), a combination of version and flexion thus resulting; the amount of total flexion of the organ is determined by these factors. In a minority of cases it is the fundus which retains the normal direction (fig. 133, No. 6), while the lower segment undergoes flexion, and these cases are chiefly those where the flexion is due to the influence of contracted pelvic exudation.

Several factors tend to induce the tendency to flexion rather than version, or to engraft the former condition upon the latter. While admitting much deficiency in our knowledge of the action of the uterine ligaments and supports, the upper end of the organ is undoubtedly more mobile, or mobile over a larger arc, than is the lower, so that a greater leverage power is exerted by pressure upon the fundus than elsewhere. This explains how pressure exerted against the fundus may cause version, but also how version may speedily tend to flexion or bending of the organ also. In not a few cases there exists also a congenital tendency to undue flexion, at any rate anteriorly. We have noticed this especially in the infantile type of uterus, and when this tendency, however slight, exists, everything in the shape of downwards pressure will tend to exaggerate it. In cases where small tumours exist within the uterine walls, the higher they are placed, the greater will their tendency be to cause flexion rather than version of the organ. Again, there exists in many

FORWARD DISPLACEMENT

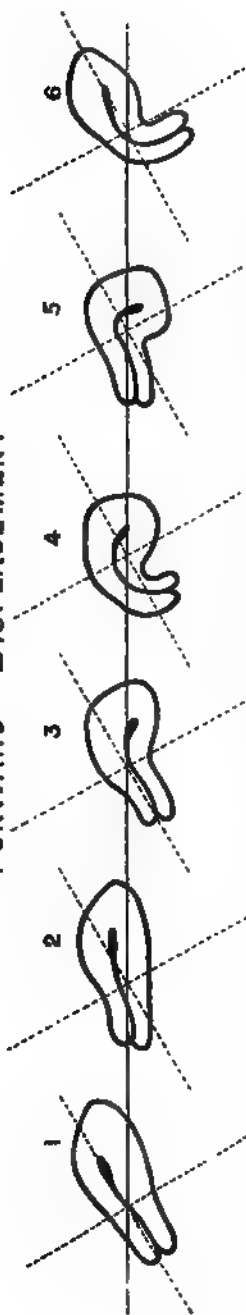


FIG. 133.—Schema of Forward Displacements of the Uterus. The numbers are referred to in the text. The dotted lines are parallel to the plane and the axis of the pelvic brim.

BACKWARD DISPLACEMENT

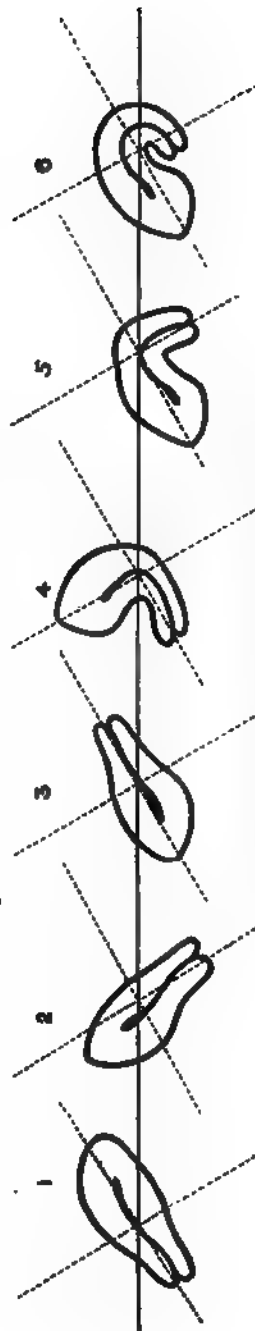


FIG. 134.—Schema of Backward Displacements of the Uterus. In both diagrams No. 1 represents the normal inclination.

instances some softening or thinning of the uterine walls, especially about the junction of cervix and body; this may also be congenital, or it may be due to the former existence of some amount of flexion, or it may be the flaccidity sometimes caused by chronic metritis, when the whole organ is not stiffened by chronic fibrous deposits. The too frequent overfilling of the bladder exerts a paramount influence on the production of backward version, but the influence of loaded rectum on forward versions is not exactly corresponding. The bladder not only pushes the uterus back, but, as a bag of fluid, may overlap it, and press or bend it down in the abnormal position (fig. 135). The rectum, lying lower, and containing more solid contents, and being moreover more strongly retained in position, does not act similarly. But whether there is a tendency to



FIG. 135. The Bladder overlapping a Retroflexed Uterus (Schatz).

forward or backward displacement, the intestines by their weight tend always to increase it. They may, in forward displacement, crowd downwards into Douglas's pouch and so assist in its continuance, or in backward displacements they may, by mere downward pressure, confirm and render continuous the wrong impetus towards retroflexion once given by the bladder.

Anteflexion.

Causation.—As we have seen, this is not infrequently congenital, or in cases where the uterine wall is soft, or there is enlargement of the fundus from any cause, it easily occurs, in spite of the contrary action which the moderately filled bladder might be supposed to exert. The uterovaginal connections are lax, and, if flexion once exists, the full bladder, instead of unbending the uterus, simply pushes the whole organ downwards in its anteflexed condition, and, when emptied, allows it to remain so flexed. When anteflexion is met with in women who have not borne children, it may almost be assumed that there was a certain amount of congenital abnormality, unless a fibroid growth can be made out; but in those who have borne children, the causation may lie in any of those circumstances which we have already described as common to all forms of displacement, and it will often be impossible to say which of these has taken the

leading part. But when the flexion is sharp, and unaccompanied by other signs of infantile uterus, and especially if there is any loss of mobility, there will always be a strong presumption that pre-existing peri-uterine inflammation has had some share in the causation, and, as Schultze has pointed out, this may act either directly by dragging down the fundus or pulling the cervix forward, or indirectly by retracting the sacro-uterine ligaments. The student will understand this better when he has studied the various pelvic inflammations.

The Symptoms are as indefinite as in most other forms of uterine disease. Bladder troubles are naturally very common—frequent micturition, occasionally incontinence or retention of urine, now and again cystitis—but there may be not a single bladder symptom. Back ache, loin pain, leucorrhœa, and the like, are also frequent, sometimes absent. No one is justified, from such symptoms, in deciding anything but the necessity for a careful physical examination. Sterility is, of course, very frequent, but the physical obstacles to the progress of the semen, which may be overcome in a case of unruptured hymen with intense vaginismus, are not unconquerable in the case of a flexed cervix. Dysmenorrhœa most frequently, though by no means always, is a marked symptom or result of anteflexion, although I am aware of the delicate ground on which I stand in making this assertion. Turning to the causes of dysmenorrhœa, I find (1) that the neuralgic constitution is, as shown in every way, very common in those who have an infantile development of the uterus and ovaries, and that this temperament shows itself in the form of dysmenorrhœa of neuralgic or ovarian character. (2) I find that engorgement of the fundus is not unusual in cases of bent uterus, and that dysmenorrhœa may thus naturally be expected, although the general engorgement of the whole organ during menstruation has a tendency to stiffen its walls, and so, to a certain extent, to straighten its canal, the one circumstance tending by its effects to counteract those produced by the other. (3) I know that the bending of a flexible tube does diminish its calibre almost to extinction. A Higginson's syringe or a baby's sucking bottle presents a familiar example. Hence difficulty in all but the most gradual and liquid flow. (4) If the flow is retarded by this cause, I know that intra-uterine coagulation is a physiological result, involving the expulsion of the coagulum and consequent dysmenorrhœa. All these causes of dysmenorrhœa may occur individually, or may be combined, in flexed uterus. But beyond these theoretically presumptive reasons why dysmenorrhœa should not infrequently accompany anteflexion, I can assert that, time after time, the straightening of the uterus by sound, or even by digital pressure, has caused the temporary cessation for months of dysmenorrhœa which had lasted for years, and has occasionally resulted in its permanent cure. The fact that in comparatively rare instances we have

well-marked anteflexion, with no great neuralgic tendency, with no apparent uterine engorgement, and with the regular and painless flow of an unclotted and liquid menstrual discharge, through the bent uterine canal, does not in any way invalidate the assertion that dysmenorrhœa is a most frequent symptom and result of uterine anteflexion. In anteflexion in the multipara, there is less tendency to dysmenorrhœa of a violent character, owing, doubtless, to the greater patency of the canal.

Diagnosis. The diagnosis of anteflexion should not generally be very difficult, if we bear in mind its physical signs, which should, in the first place, at any rate, be made out bi-manually. The cervix may be in its normal position, while a rounded body is felt through the anterior vaginal fornix (fig. 133, No. 3), or the cervix may point forwards as in retroversion, but the fundus is still to be made out anteriorly instead of posteriorly (fig. 133, Nos. 4 and 5). The chief point is to be assured that the rounded body in front is really the fundus, and, if so, that it is not the fundus or body of an impregnated uterus. Whenever there is the slightest doubt on this latter point, the use of the sound is inadmissible, but we must trust to our knowledge of the changes of the cervix occurring during pregnancy, and to the fact that the uterus is not only to be felt unduly forwards in pregnancy, but is also enlarged backwards to some extent. If necessary, we must await further developments. A fact, not generally noted, should be borne in mind, viz., that in sharp anteflexion the anterior lip of the os is often swollen and œdematous, owing to interference with its circulation. This is not, therefore, in any way diagnostic of pregnancy. It is stated by Leishman that an anteflexed fundus uteri, felt through the partially filled bladder, has been mistaken for the ballottement sign of pregnancy. This could only happen where one sign alone was depended on, and the absence of pregnancy sufficiently advanced to be capable of producing ballottement could easily be made out by bi-manual examination. Fibroid growths of the anterior wall are less frequent than those of the posterior. They naturally simulate anteflexion, or produce some amount of it. The direction of the sound, and its power of entirely removing the flexion, combined if necessary with supra pubic examination, should clear up this doubt. Pelvic exudations of blood or lymph are occasionally confined to one situation in front of the uterus. Their history, the uterine immobility they cause, the totally different shape of the mass, when examined bi-manually, from that of a flexed uterus, and the direction of the uterus, ascertained by the sound or bi-manual touch, give sufficient evidence of their true nature. Vesical calculus or tumour, by the urgency of its symptoms, will call for examination of the bladder itself, and this, together with the vaginal exploration, will show where the seat of swelling really exists (*see* Chap. XXII.).

The young practitioner must never omit to allow for a slight amount of ante flexion, something nearly approaching to No. 3, fig. 133, as the almost normal state of the virgin uterus.

Treatment.—The treatment of ante flexion is much more unsatisfactory than that of the opposite condition. Its frequently congenital origin, and the greater difficulty of applying artificial supports, account for this. In cases of congenital flexion, where there are no urgent symptoms, it is much wiser to refrain from all local treatment. We are most likely to set up congestion or inflammation of the fundus, and so to create the symptoms. There can, however, be no objection to mere bi-manual reposition without the use of the sound; but I have only seldom found much permanent effect on the flexion. In those cases where dysmenorrhœa first leads to investigation, the careful use of the sound as a reposer should be tried, care being previously taken, by rest and a few glycerine plugs, to reduce any hyperæmia. No force must be used, and but little pain should be caused. In passing the instrument the fundus should be pressed up by the finger so as to aid in straightening the uterine canal. The flexion, whether at the os internum or not, should be coaxed or tired, not forced. The sound once in, if there are no adhesions, the body should be raised to quite its normal height, or even somewhat retroverted, bearing in mind the instructions given above as to the kind of rotation which is permissible. If the handle of the sound is brought well forwards in front of the pubes without any rotation, the normal elevation of the fundus or more is attained, and the handle must then be swept slowly round in a wide circle, its point being regarded as a stationary centre. This manœuvre may be repeated two or three times between two menstrual periods, and if no great irritation follows, a somewhat larger sound or bougie may be used each time. Some troublesome cases are thus curable, that is to say, the patient loses her dysmenorrhœa, or, if married, sometimes becomes pregnant. In the latter case the cure is generally permanent, both as regards symptoms and as regards the physical condition of flexion. Unfortunately we can seldom say this of posterior displacements, although their immediate treatment is more easy. For the relief of the dysmenorrhœa of ante flexion the division of the cervix, as recommended for stenosis, is often of considerable service. When the bend is in the cervix itself, and especially if it be at or close to the vaginal insertion, this plan is sometimes invaluable, but common sense would assure us that it can hardly affect the symptoms when the bend is much higher up, as it is apt to be in cases occurring in multiparæ. All that was said before (p. 188) in favour of a single backward incision, applies here. It should divide the posterior lip more than half-way up to the level of the vaginal

insertion, and after it has been made, a sound should be passed to ascertain whether the entrance to, and consequently the exit from, the uterus has been made clear. If there be still difficulty, a probe-pointed knife should be passed, edge backwards, a little beyond the upper end of the cut, and the cervical parenchyma should be divided a little further, as much care being taken not to go beyond the cervical wall as is required in the most delicate of surgical operations. The line of the first incision, and of that made by the knife afterwards, are respectively shown in fig. 136. The object of this incision is not only to enlarge the canal, but to cause its axis to become more conformable to that of the body. Care will be necessary for a considerable time, to keep open the wound thus made, by occasionally passing a bougie, or by introducing a glass stem pessary at intervals. No doubt this operation is liable to abuse, but when the other means for the treatment of dysmenorrhœa, including slow dilatation by bougies, have been found unavailing, it is perfectly justifiable and frequently successful. I think I have made it clear, but may as well repeat again, that all local measures of this kind are to be anteceded by the careful removal of all removable causes of displacement. The treatment of ante flexion by means of intra- or extra-uterine supports is mentioned further on when describing the various pessaries in use. It is here that our treatment is so much more unsatisfactory than it is in backward flexions or versions. In no case of ante flexion should the possibility of previous pelvic inflammation be forgotten, leading us to caution in the use of all local treatment, and pointing to the possibility of good results from tonic and absorbent remedies, such as are indicated in all chronic cases of the inflammatory affection. Such flexions as No. 6, fig. 133, are especially the result of former small cellular inflammations, bending the cervix forwards.

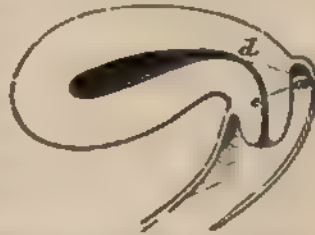


FIG. 136.—Incisions of the Cervix required in certain cases of Ante flexion (after Sims). *ac*, the preliminary incision; *ad*, its completion in extreme cases.

Anteversion.

This is, in one sense, a much less common affection than ante flexion; in another sense it is more frequent. The congenital element in causation tends always to flexion, and therefore, in nulliparæ, ante flexion is the predominant form of forward displacement, while in multiparæ the reverse is the case.

Causation.—The causes of pure anteversion are much more frequently met with after delivery or abortion, though by no means invariably; they are, however, common causes, and a certain degree of anteversion is, therefore, common in the married. But as a forward dip of the fundus uteri, constantly altered by the condition of the bladder, but roughly corresponding, in medium dilatation of that organ, to the axis of the pelvic brim, is normal, it is most difficult, or impossible, to say, in many instances, whether anteversion exists or not. The presence of its usual causes, and the undue excess of symptoms of bladder pressure, are often our only warrant for believing it to exist. Such a complete upset of the organ as is sometimes met with backwards (fig. 134, No. 3), where the fundus lies low in Douglas's pouch and the cervix points almost directly upwards, is almost an impossibility in forward displacement. It would require the rarest possible combination of circumstances to produce it. In pregnancy we have a physiological rather than a pathological anteversion; and the circumstances which lead to the pathological state are chiefly those which cause the uterus to assume something of the size, weight, and fulness observed in early pregnancy. There must be increased weight of the organ, while its walls are not so much softened by disease or by congenital causes as to allow of the flexion which would otherwise ensue. Chronic corporeal metritis fulfils these conditions, so does sub-involution. Interstitial fibro-myomatous growths, or small isolated sub-mucous or sub-serous tumours, if their power is not exerted directly downwards from the summit of the fundus, also tend to produce anteversion. In a few cases an original ante-flexion becomes converted into an anteversion by inflammatory or sub-involutional complications which stiffen the uterine wall, and Schroeder mentions, and I have myself observed one or two instances, where the temporary engorgement of the menstrual period had, temporarily, a similar result,—where No. 3 or even No. 4 of the displacements shown in fig. 133 became for the time being No. 2. Cystocele, or prolapse of the anterior vaginal wall, is apt to create anteversion as the first stage of prolapsus uteri, although the uterus, yielding to the pelvic curves, and dragged down by the posterior vaginal wall also, most frequently becomes subsequently retroverted.

Symptoms.—The symptoms of anteversion are those of the disease which causes it,—of chronic metritis, fibro-myoma, &c.,—with some aggravation of those of bladder-pressure. In extreme cases the cervix presses backwards on the rectum so much as to cause much constipation and tenesmus. In all cases the cervix felt through the rectum is a very prominent feature, and conveys the idea of greater displacement than really exists. There is nearly always some difficulty or discomfort in locomotion.

Diagnosis of minor degrees is, as we have seen, rather a deduction from the observance of general facts than an absolute certainty; but there should be no great difficulty in the way of differentiation from other affections which may simulate anteversion. Above all things pregnancy must be eliminated, or, if that cannot be done, the diagnosis must be deferred. But, given the existence of a cervix uteri pointing more than usually backwards, of a somewhat weighty mass to be felt by bi-manual examination in front, and of an organ which is at all movable, the only question is, What is the cause of the anteversion, which in itself is apparent enough?

Treatment, therefore, resolves itself, in nearly all instances, into the treatment of that cause. General constitutional treatment is of value as it bears upon this. Frequent, if not constant, dorsal decubitus is of service, as affording relief to many of the prominent symptoms. Vaginal astringents or suitable pessaries will aid, in the alighter cases, in diminishing cystocele, or operations on the perineum may act in the same way. Artificial supports will be found to be effective only as they maintain the whole vaginal tract *in situ*, or as they lift up the otherwise diseased uterus and so diminish its passive hyperæmia. In short, there is, I believe, no special treatment of anteversion apart from that of its causes. Sims has suggested shortening the anterior wall of the vagina by plastic operation, and so pulling forwards the cervix and lifting the fundus. I do not think this could be effective with the usual heavy and enlarged uterus, which leads to real and unmistakable anteversion.

Backward Displacements of the Uterus.

General Remarks.—Although cases of congenital retroflexion are recorded, yet they are so rare that we may, for practical purposes, consider backward displacement of the uterus as purely an acquired condition. There is one element at work which is continually tending to produce a temporary displacement in this direction, viz., the action of the full bladder; and it is not difficult to imagine how, even in the virgin, and with a normally heavy uterus, a sudden jolt under these circumstances will increase the displacement, and how the superincumbent pressure of the abdominal viscera, now acting on the front of the uterus instead of on its posterior surface, will perpetuate the condition, and ultimately render natural recovery impossible. This is undoubtedly the actual causation in many cases met with in the unmarried or nulliparous woman. Whether version or flexion result will depend on the flexibility of the uterine wall, or on the persistence of pressure on the fundus. Considering the frequency with which the female bladder is unduly dis-

tended, it is astonishing how seldom we meet with the result. I can account for this only in two ways—first, that many cases of uterine retroversion are not recognised until marriage or pregnancy increases the symptoms, or for the first time causes them to appear; and, second, that the anterior uterine ligaments have much greater power than has been attributed to them by most modern physiologists.

As might be expected, retroversion is generally the precursor of retroflexion. An organ with normally stiff walls, and, still more, one with walls stiffened by disease, will at first simply tilt over; and then, as persistent pressure weighs down its fundus, bending will follow; but the partiality occasionally shown by the interstitial hypertrophy of chronic metritis, or by sub-involution, for separate portions of the uterus, for its intra-vaginal or supra-vaginal cervix, or for its body, will equally account for the occasional presence of flexion from the first. The greater or less relaxation of separate portions of the ligamentous supports is doubtless also a factor in hastening or retarding the tendency of the uterus to bend on itself.

The convenient space afforded for a backwards-turned fundus uteri, in Douglas's distensible peritoneal pouch, accounts for the frequency of the condition, and also allows of its comparatively easy recognition. In the post-puerperal state, the heavy uterus gravitates backwards, owing to the position on the back usually enforced on the patient, and this is aggravated by the firm binding of the abdomen which, for various reasons, is adopted. A frequent change of position is therefore very desirable. Exudations of lymph behind the uterus, with their subsequent partial absorption and contraction (fig. 27), account for a certain number of cases of backward displacement, but the displacement is much more commonly primary, while the inflammation, and its result in irretrievably fixing the uterus, are secondary. I have already referred to the fact that, in prolapse of the uterus, anteversion is common in its earliest stages, owing to the dragging of the anterior vaginal wall, but that backwards displacement occurs at a later stage. Small fibroid growths are more common in the posterior than in the anterior wall of the uterus, and therefore more often figure as causes of displacement, or sources of difficulty in diagnosis.

Retroflexion.

The causation of this affection (fig. 134, No. 5) has been almost entirely indicated in the foregoing remarks. The uterine body is nearly always enlarged by sub-involution or chronic metritis, or by mere engorgement. The enlargement may be independent of those causes, as when a fibroid

is present. The over-distended bladder, or the usual post-puerperal position, or some temporary shock, gives the impetus backwards. Then come into play the relaxed state of the ligaments, the pressure from above of the intestines or of the loaded cæcum, and the softening of the uterine wall, due to recent parturition or to other causes, to complete the state of more or less permanent flexion. In the unmarried, retroversion is the more common result of any of these non-puerperal causes, although flexion is by no means unknown.

Physical Signs.—On bi-manual examination the cervix will be found pointing downwards, generally with a forward tendency (fig. 134, No. 5), the result of previous retroversion. It is seldom that flexion is so great that the cervix points backwards (No. 6). The bend is most commonly at or about the os internum. The cervix may show pathological changes of its own, hypertrophy, laceration, chronic endocervicitis, &c.,—but the posterior lip is very often swollen and oedematous, independently of these. The fundus lies more or less low in Douglas's pouch, and its continuity with the cervix is easily traceable. Owing to the usual causations the walls are generally thickened, and the cavity is shown by the sound to be somewhat lengthened. It is to be remembered that these conditions become increased, as an effect of the flexion, as well as entering into its causation. At the point of flexion I have rarely noticed any perceptible thinning of the wall, either at the concavity or convexity. This agrees with Barnes's experience, although not with that of some other writers. The fundus is felt to be freely movable in most cases, and can be replaced, but not very infrequently it is tied down by adhesions. I have occasionally suspected such adhesions at one visit, and subsequently found them not to exist, and this has been explained by the fact that the utero-sacral ligaments may grasp the fundus laterally, and so temporarily retain it *in situ*. Hermann insists that the pressure of the utero-sacral ligaments on the venous circulation of the retroflexed uterus is a fertile source of further passive engorgement, and through this, of dysmenorrhœa or menorrhagia, when they accompany backward displacement. The ovaries are more or less dragged down with the uterus, and may often be felt bi-manually, lying beside or even behind it. In too many cases, when there has been subsequent inflammatory action, they become adherent to it or to their surroundings, and furnish the greatest difficulty in the way of applying pessaries for the support of the organ.

Symptoms.—The symptoms of retroflexion partake of the usual vague character, although, in a multipara, it is very often easy enough to feel pretty sure of its existence from symptoms alone. Occasionally there are hardly any, but this is not common. Some time ago I saw a lady on account of a totally different disease, who informed me that a celebrated

American lady doctor had diagnosed uterine retroflexion. As there was not the remotest symptom of any uterine affection that I could elicit, I was tempted to express strong doubts about the matter, but on examination I found a very complete retroflexion. The patient does not believe either of us, and will wear no pessary. The only result, rather than symptom, in her case, is sterility for several years after the rapid succession of two normal labours. Generally, however, we have the usual utero-pelvic troubles, back-ache being especially prominent. Defecation is interfered with, and the patient can often tell that there is something pressing on the bowel and obstructing it. Pressure on the bladder is more frequent in pure retroversion. The symptoms of chronic metritis, parenchymatous or mucous, are those which ordinarily lead to investigation. As the case goes on, they become exaggerated, and are apt to lead to menorrhagia or even metrorrhagia. Dysmenorrhœa is a much less prominent feature than in anterior flexion. Menstruation has usually been well established before retroflexion takes place, and the canal is patulous. Neuralgia, and tendency to varix in the lower extremities, are frequent, the causation being obvious. Paraplegia is also occasionally a result. I have seen but three cases, in all of which it was undoubtedly not due to organic nerve disease. In two it got well shortly after reposition, and in one it yielded to Weir Mitchell's treatment by *massage*, &c. Sterility is a common, though by no means constant, result. If impregnation does occur, abortion is, however, very apt to ensue, and many, if not most, of the cases of retroversion of the gravid uterus met with are not purely accidental, but date their origin to an already retroverted or retroflexed uterus, which fails to ascend above the pelvic brim. It will be seen that I have confined my remarks to backward displacement of the non-gravid uterus.

The *diagnosis* of retroflexion depends on a correct appreciation of the above symptoms and signs, and on the replacement of the fundus by the fingers or the sound, when this is not prevented by adhesions. If the student will look back to the statement of the occasional abnormal occupants of Douglas's pouch (p. 7), he will find there an enumeration of the substances which might be mistaken for a retroflexed fundus. Of these, fibroid growths, pelvic exudations, or ovarian tumours, are the chief sources of error. Fæcal accumulations, prolapsed ovary, abscess, hernia, and extra-uterine foetation, may be dismissed; they have special characteristics or histories which should prevent permanent error. Small fibroid tumours, which may, however, coexist with some amount of retro-displacement, are recognised by careful bi-manual examination, which reveals the change in the whole uterine shape or size, while replacement by the sound is only partial, if it occurs at all. In all cases of doubt of this kind, great assistance is derivable from rectal examina-

tion, alone or combined. Pelvic exudation, whether of coagulated blood or of lymph, is recognised by its history, sudden commencement in hæmatocele; febrile symptoms, &c., in inflammation,—and by its complete immobility, and extension laterally or forwards. Of course, a retroflexed uterus may be surrounded by such exudation, when the diagnosis will require much care and time, and no practical benefit will be derived from hasty attempts. In the absence of acute febrile symptoms, the sound will detect the direction of the uterine canal among the surrounding deposits. Small ovarian tumours, or the prolapsed ovary, when enlarged by inflammatory deposits, may resemble the fundus uteri in contour and position, and may give rise to some difficulty. As a rule, their complete isolation from the uterus may be made out bi-manually, but, if adhesion has taken place, the pain of a prolapsed and inflamed ovary is very characteristic; the softness of ovarian cysts distinguishes them from fibroid outgrowths, and, in the rare complication of a solid ovarian growth adherent to the uterus, it may be impossible to say that it is not a fibroid outgrowth, but the direction of the uterine canal will show that it is not the retroflexed fundus.

The *prognosis* of retroflexion is, I fear, not a very bright one. If rephendable, it can generally be kept *in situ* by pessaries, and all serious symptoms may be removed. Even if pregnancy follow, and all the hostile conditions may be supposed to be in abeyance, while there is every chance to avoid their recurrence after delivery, the flexion nearly always returns sooner or later, and may again require artificial support. The more early it is detected the greater ought to be the chance of the *juvantia et lædencia*—the helping or the hindering conditions—being reversed in power, but that is all that can be said. Paul Mundé, in the *American Journal of Obstetrics* of October 1881, has gone into the question of prognosis more carefully than any other writer of whom I am aware, but he leaves the matter pretty much as thus stated.

The *treatment* of retroflexion will be most profitably discussed in connection with that of retroversion.

Retroversion.

Causation.—Whenever the bladder is distended to its fullest extent the uterus is retroverted, that is to say, in the upright position, its fundus may be as far back as, or further, than its cervix. But normally the presence of the full bladder prevents any other cause of retroversion from intervening between it and the uterus, and after urination, the uterus, if not permanently dragged back by pathological weight, too powerful for its ligamentous attachments forwards, returns to the normal

condition. A sudden strain, however, at this time, or a fall while skating, or on the slippery footpath, gives a little further impetus backwards, or even the increased weight of the menstrual period, and still more of a uterus enlarged or congested from any other cause, prevents the normal resilience, and permanent retroversion commences. It is kept up by superincumbent pressure, as we have described above, and either remains as a retroversion, as is not uncommon in the unmarried, or eventuates in a retroflexion.

As regards *symptomatology*, there is nothing to be added to what has been said about retroflexion. Undoubtedly many cases occur with few or no permanent symptoms, and of these many may right themselves, undetected by the physician and unaided by art. When symptoms do arise, they are similar to those of retroflexion—perhaps there is a little more tendency to bladder symptoms, from the pressure of the rigid cervix on that organ.

The *physical signs* are obvious enough when the retroversion is simple. The cervix points directly forwards instead of backwards (fig. 134, No. 2), and in extreme cases it may point upwards (fig. 134, No. 3). There is nothing in front of it corresponding to an anteflexed fundus, but, on the contrary, the uterine body can be traced backwards by the finger, and even downwards, low into Douglas's pouch, without any sulcus such as is felt in retroflexion. Bi-manual examination confirms the impression thus produced, by showing that there is nothing to be felt above, in the ordinary position of the fundus uteri, unless we tilt it up by pressure backwards on the cervix. Remembering how retroflexion is so frequently the mere sequel of retroversion, it is not surprising that in most cases of the former we have a considerable degree of the forwards pointing cervix of the latter (fig. 134, No. 5), that the two affections are in fact combined. If there is no suspicion of pregnancy, the sound can be passed backwards, perhaps with some difficulty, and then, first, combined with rectal touch, it can show the presence of the movable fundus in Douglas's pouch, and afterwards, used as a replacer, it can bring the fundus forwards within reach of the hand pressed downwards through the abdominal walls. In this way there should never be any difficulty in differentiating the forwards pointing cervix of acute ante-flexion from that of retroversion, and the other affections liable to be mistaken for retroversion are precisely the same as those which require differentiation from retroflexion.

Treatment.—The treatment of retroflexion and retroversion consists of—

1. The replacement of the organ in its normal position.
2. Its retention there.
3. The removal, sometimes previously, sometimes subsequently, but

generally simultaneously, of the causes which led to the displacement, or of the results which have followed it.

The retroverted or retroflexed uterus may be replaced in many instances by the hand alone. The forefinger of one hand is used *per vaginam* to press the cervix well backwards, which pressure, in simple retroversion, or slight cases of retroflexion, involves a corresponding movement forwards of the fundus; the other hand is used to reach the fundus through the abdominal wall and to draw it forwards. If the operator stands in the usual position, at the side of the couch, while the patient lies on her back, he will find it most convenient to use the right hand internally, and while the cervix is being repressed by the index, the middle finger may assist in raising the fundus, and bringing it within reach of the left hand, used from above. In some cases it may be necessary to increase our leverage power by reaching the fundus through the rectum with the left forefinger, while we repress the cervix *per vaginam* by the right, the operation being afterwards completed as just described. In most cases, however, except where there may be a suspicion of pregnancy, or where there is an irritable state of the uterus, reposition by the sound is, in my opinion, preferable, although I know that this is hardly the general opinion. While the uterus is retained in position by the sound, we can also much more satisfactorily introduce the most usual form of pessary. No special uterine repositor other than the sound is necessary. Schroder strongly recommends the use of an intra-uterine stem pessary for the purpose of reposition in uterine flexion. If a straight stem of this kind (fig. 99) can be introduced, it converts the flexion into a version, and the bi-manual method of reposition can then be used more effectively, the pessary being subsequently removed, or left *in situ*, as may otherwise be considered desirable. In retroversion, or in retroflexion, when the os uteri does not point directly backwards, the sound may be used from the first with its convexity forwards, the operator pushing up the fundus with the directing finger after the instrument is lodged in the cervix. With a little coaxing, and gentle pressure of the handle towards the pubes, the instrument enters the body up to its full depth. If the cervix, in retroflexion, points very much backwards, it may be necessary to introduce the sound with its point forwards and convexity backwards, and then, by a *tour de maître*, to turn the point backwards, which will bring the cervix more into a line with the fundus, and enable us to proceed as before. We are generally advised to bend the instrument very freely in cases of sharp retroflexion, so as to get it round the acute bend, but this should not be overdone; tact and practice will succeed without it in most cases, and the sound is more fitted for its action as a repositor when its curve is not too acute. We have generally a pretty certain knowledge whether

the uterus is mobile or fixed, before attempting replacement by sound; but whether we have or not, all attempts at reposition in this way must be made slowly and gently, as if adhesions were present, and as if we knew the uterine walls to be soft, and easily perforable by the point. The great mistake that may here be made by the tyro is in simply twisting the sound round on its long axis. That would certainly bring the point forwards, but the fundus uteri might not accompany it, but simply let it pass through its wall. First gently pass the handle backwards against the perineum (fig. 137)—this in itself will lift up the fundus, though permitting still of some retroversion—then keep the point as far as you can stationary, and give the handle a wide, slow, and gradual circular sweep round the uppermost or right buttock, till its roughened side, which represents the concavity of the curve, is turned forwards instead of backwards, while the shank presses against the pubic arch. A reference to our diagram will show that a little

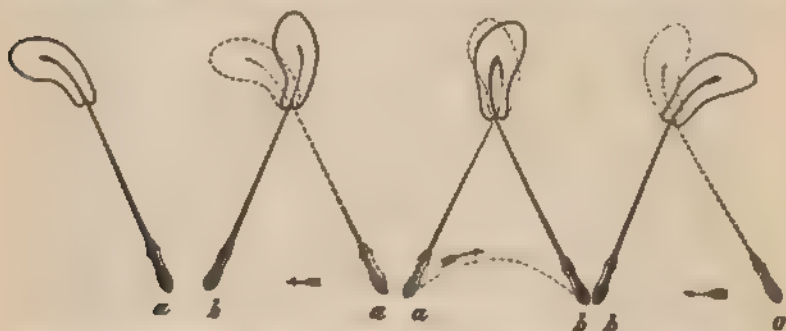


FIG. 137.—Replacement of the Retroverted or Retroflexed Uterus by the Sound. The three movements, as represented in the three figures to the right, and, as explained in the text, are from *a* to *b*.

advance in reposition has been thus made, but that we are still far from even normal anteversion. The uterus is almost perpendicular, but if the handle is now once more repressed against the perineum, the point will pass directly forward, or rather the convexity will press the cervix directly backwards, and reposition is complete. During this time the directing finger should never leave the cervix, so that we are fully informed of what is taking place. Of late years I have observed an increasing tendency to recommend manual reposition instead of replacement by the sound, and I cannot help associating this with what I believe to be a retrograde rather than a forward movement in gynaecology, viz., the use of the sound, when the os is perfectly patulous, with the end of the duck-bill speculum, instead of in the manner recommended in Chap. I., without a speculum at all. In many instances it will be advisable now to apply a Hodge or other similar pessary, as will be after-

wards described, before withdrawing the sound, but in others it may be better to see what the uterus will do when left to itself for a time, or merely to support it by inserting a temporary plug of cotton or sponge into the anterior vaginal fornix, which will tend to keep the cervix backwards. It is rarely necessary or advisable to place the patient on her knees and elbows, or knees and thorax (genu-pectoral position), for the reposition of an ordinary backward displacement, although the position is of great service when we act *per rectum* on the longer leverage of a retroverted gravid uterus, or of a uterus bearing a fibroid growth. Should the uterus be in a state of subacute inflammation, only the most gentle attempts at manual reposition may be desirable, or even these must not be proceeded with, until, by the means formerly indicated—the hot-water injections, glycerine plugs, &c.—this complication has been overcome. If adhesions are present, they must on no account be forcibly interfered with, but by the continued use of the just mentioned remedies, combined with alternative or absorbent medication, they must be removed, or rendered less liable to resist interference. This does not always prevent us from giving partial support, or even from promoting gradual stretching of the adhesions by the use of elastic pessaries, such as the watch-spring ring or the inflated Gariel's air bag. This leads once more, and for the last time, to the mention of uterine supports. The treatment of the various affections which add to the size and weight of the uterus, and which, as I have said, must be conducted both before and after replacement, includes no small portion of our four previous chapters.

It is not in accordance with the design of this work to recommend or describe operative proceedings of novel character, which must as yet be considered as quite on their trial. Yet the able and moderate way in which Dr Alexander of Liverpool has placed before the profession a surgical remedy for prolapse and posterior displacements, and the evidence which seems to be already accumulating in its favour, compel me to notice a proceeding which I have not yet personally tested, but which I hope to test at an early period.

In 1882, Alexander advocated, not perhaps with absolute originality, the cutting down on and shortening the round ligaments, as a means of curing backward displacements of the uterus. Since then, others have copied or modified his operation, and he has published the results in a small volume (London, 1884, Churchill). I have laid but little stress on these ligaments as uterine supports, but it may be the case that they act more powerfully than we suppose as a sort of extra check rein, or that, although they are normally of little importance, "we can make them of use in cases of uterine displacement." The operation cannot be very difficult, except in very stout subjects. An incision, one to two inches long, is made on each side, from the spine of the pubes, upwards and

outwards; the external abdominal rings are cut down upon, and the ends of the round ligaments are raised by a blunt hook. The uterus is now replaced by sound, and held in place, while the ligaments are drawn out till they are felt to hold it sufficiently upwards and forwards. They are then fixed by wire sutures to the pillars of the abdominal rings, and the wounds are treated antiseptically. A Hodge, or in some cases a stem pessary, is introduced and worn for some time. The results given by Alexander and others are sufficient to convince me that, although time may modify our estimate of the degree of permanent success attainable, we have here a new method worthy of extensive trial.

Unduly Mobile Uterus.

I should mention here a condition sometimes met with, and which I have known to be productive of rather ludicrous discrepancies in diagnosis. In clinical work, especially, I long ago found that a most intelligent medical officer and myself were apt to be in absolute disagreement as to whether a patient suffered from forward or backward displacement; and, on reference to existing facts, that one of us—as often one as the other—was obliged to convict himself of what appeared to be a most careless mistake. It was the old story of the chameleon. We had seen the case at different times, and under varying conditions. With a heavy hypertrophied uterus and relaxed supports, it sometimes happens that the ordinary result in prolapse does not ensue to any great degree, but that, instead, the uterus rolls about and is displaced anteriorly and posteriorly according to immediate circumstances. There may be all the usual utero-pelvic troubles, varying in degree or in relative severity from day to day. I have not been able to trace the difference which Schrader finds between flexions and versions, in their symptomatology under these circumstances, but I can most fully endorse his opinion that the treatment of such cases by elastic ring pessaries is eminently satisfactory, while means are being taken to reduce the size of the uterus or strengthen its supports. Another source of fallacy in connection with backward displacements is recalled to me here, and I mention it chiefly because I have come across no reference to it in any of the ordinary works on gynecology. We may have, apparently, a well-marked case of retroversion or retroflexion. All the tests except the sound have shown this; but on endeavouring, in the most gentle manner possible, to pass the sound in the usual forward direction, it so passes without the slightest difficulty. One at once supposes an error in diagnosis, and that the swelling in Douglas's pouch must have been something other than the fundus uteri. But it is entirely gone. The only

possible deduction is that the uterus was so soft and flexible as to yield to the passage of the sound, although that was made in the wrong direction and as gently as possible. My friend and colleague Dr Steell, formerly resident physician to the Manchester Royal Infirmary, assisted me very much in working out this fact, which had occasionally given rise to some differences of opinion between us as to the diagnosis of certain cases.

Lateral Displacements.

This form of flexion or version need not long detain us. I have seen it once or twice in what I believed to be a congenital form, freely movable and without uterine enlargement; but it is generally the result of pelvic exudations, which tend to fix the organ in its acquired position. Physical examination will alone lead to its detection. The *symptoms*, when the uterus is not fixed, are usually slight; and if a pessary be required, it must be a Hodge, or a Graily Hewitt cradle, moulded so as to give prominence to the one side, or some form of intra-uterine stem may be necessitated. In all other cases it is the removal of the exudation which must be sought for. I once succeeded in curing dysmenorrhœa due to firmly-fixed laterally-flexed uterus, by incising the convex side of the cervix, precisely as is done with the posterior wall in ante-flexion. It is important to be as sure as possible how much of the lateral swelling felt in these cases is uterine and how much pelvic exudation, and this knowledge can only be attained by careful bi-manual examination.

CHAPTER XII.

DISEASES OF THE UTERUS—*continued.* Mechanical Supports used in the Treatment of Displacements of the Uterus and Vagina. Belts, Pessaries, &c.

ALTHOUGH I have reserved the description of the pessaries and other mechanical means which are used for the support of the displaced uterus until a separate chapter, and although many of these, especially the Hodge pessary, are suitable in various forms of displacement, it will still be advisable to preserve a sort of order, although not too strictly, according to the kind of displacement involved.

The Use and Abuse of Pessaries. For the general practitioner or student, I am convinced that the appreciation of a small number of pessaries is infinitely more valuable than that of too large a number, and I feel almost called upon to apologise for the number here referred to. I would strongly advise all students to let alone the more complicated forms. They have nearly always been evolved from the study of some special and peculiar case, such as may seldom occur again. That the use of pessaries has been abused no one can deny. They were better unused altogether than used without a clear indication of their necessity, and without a full knowledge of what is and what is not to be expected from them: but certainly Matthews Duncan has overshot the mark when he states (*Clinical Lectures*, page 359, Churchill, 1883) that pessaries "are always harbourers of dirt, and they always keep the mind watching the part; they are all liable to decay, and require, if long used, to be renewed. They are all undesirable additions to the contents of the pelvic excavation, and if they are efficient, must, of course, cause more pressure than that caused by the organ or organs which they keep in altered position, though perhaps on different parts." It is a great pity that this sweeping statement was not placed in immediate juxtaposition with the wise counsel which follows a little further on:—"Look upon pessaries as a surgeon looks on a truss, not medicinal, otherwise than as a mechanical means of procuring healing, comfort, and safety to your patient." I first met with the former quotation in a foreign journal, accompanied with strong adverse comments, and I felt sure that on consulting the original work I should find some qualification. The second quotation is all that could possibly be desired in the way of recommendation of the judicious use of pessaries.

If I have described, and even figured, some forms of pessary which I would fain regard as obsolete, it is not without full consideration. They are to a large extent in common use, and do fulfil certain indications, although not those which are most desirable, and they are still preferred by many patients and some practitioners. To have avoided all mention of them would, I believe, have led the young practitioner into the belief that I had failed to notice useful means of treatment, rather than that I had condemned them after full experience, and on rational grounds. One of the main secrets in adapting a pessary is to be sure that the uterus is properly replaced, that the pessary used is of proper size, and that while supporting the uterus it does not interfere with surrounding organs, healthy or diseased. The hotly disputed question as to the order in which we should proceed—whether we should first subdue all previous causes of displacement and then proceed to retain the replaced organ if necessary, or whether we should first replace and support the organ, and then attack the causes—hardly deserves much attention. Probably neither side in the contest would fully accept the alternative conditions thus laid down, but many of them have argued almost literally in this sense, on one side or the other. *In media via cunctis sumus.* If the causation or the effect of a displacement is such that it renders the presence of a pessary painful or injurious, wait till it is subdued, but if a proper support can be made to afford comfort, and is properly watched, it will in almost every case render the removal of the causation or of the effects infinitely more easy.

General Remarks as to Pessaries. The question has also been raised whether, in the absence of any symptoms arising from a displacement that may have been accidentally discovered, any mechanical supports should be used. In prolapse this question will never trouble us. This must be remedied, without pessaries if possible, but with them if necessary. In posterior displacements I would say almost the same thing, but in anterior displacements, which are so often congenital, I would advise to leave well alone. *It is nearly always advisable to try what simple replacement can do, aided by the means we have already described; in those displacements which are anterior it sometimes succeeds in at any rate removing urgent symptoms, and the inferiority of our mechanical means of retention induces us to trust more, in such cases, to this alone. No pessary of any kind should be unwatched.* They are all foreign bodies, and may most unexpectedly give rise to symptoms due to their pressure on the surfaces with which they are in contact. The practitioner should insist on their occasional inspection by some one duly qualified. If this advice be neglected by the patient, but only then, the blame for any untoward result lies upon herself. *Every pessary should be considered as possibly curative, as a means of inducing permanent self-retention of the organ*

supported. We may have but little hope of this, but the possibility should always influence us in deciding on the kind of pessary used, if there be any choice open to us. We should always aim at decreasing instead of increasing the size and strength of our pessaries, and having introduced one, our treatment should always aim, if possible, at doing without it. *In every case the use of a pessary should be accompanied by daily antiseptic injection.* After these few and very general observations, let us see what can be done mechanically for the retention *in situ* of the displaced uterus.

Prolapsus Uteri vel Vaginæ.

(a) **Treatment of Simple Prolapse.**—The simplest procedure is to prevent extrusion through the vulva by a *pad and perineal band* (fig. 138). If the vaginal protrusion is great, or if the uterus is already lowered until it approaches the *setum vaginæ*, this will seldom do more than give a little very temporary comfort, but in the earliest stages of

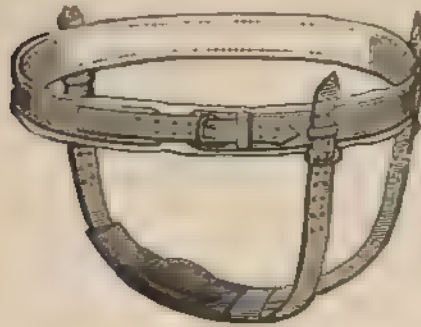


FIG. 138. —Simple Pad, with Belt and Straps.

vaginal protrusion, it may be relied on for a time until, by repair of the perineum, when that is destroyed, or by strict attention to the condition of the bowels and bladder, by the use of local astringents, and by other means, the tone of the vaginal wall is recovered. An india-rubber air-pad, such as is now frequently used for trusses, fixed to a perineal band which can be easily re-

newed, is the most comfortable form, but this, and all other forms of band covering the vulva, are very objectionable, owing to the almost constant presence of leucorrhœa. Strangely enough, the use of an *abdominal belt* is popularly much relied on, and is not unfrequently prescribed for the relief of all forms of "bearing down." One would suppose that it would only bear or press down all the more. It is well, therefore, to state what is the real use of abdominal belts or bandages. A firm, broad, circular, abdominal bandage can only act in one of two ways; it may simply compress the abdominal contents, thereby forcing them downwards into the pelvis, or upwards against the diaphragm, neither of which results is desirable.

or, as Goodell has well pointed out, it may, in old age, prevent the bow-shaped curvature of the back and the changing obliquity of the pelvis which is apt to follow in its wake. In old women, therefore, or in those who have prematurely lost the muscular strength of youth, it can alone do any good. But if an abdominal belt is so constructed that it makes firm pressure at its lower edge, with only moderate elastic support above, it may be useful in other cases. It will tend to lift up the superincumbent weight of the intestines, and so relieve their downwards pressure on prolapse, or on backward or forward displacements. In the last instance it will also tend to prevent the weight of an enlarged and anteverted uterus, such as we often find at the commencement of prolapse, from creating as much discomfort as it otherwise would. Such a belt can only be of use to those whose abdomen is so far prominent as to bring it within the reach of its lifting power. These considerations should be borne in mind by every one who recommends an abdominal belt. I cannot undertake to recommend one or more out of the scores advertised for sale.

Without any thought as to what should be the aim of all pessaries, a former generation of practitioners hit upon a certain means of keeping back the prolapsed uterus; this was to insert a ball



FIG. 139.—Ball Pessary of hard material.

of wood, or a more or less modified oval or disc-shaped mass, of the same or other hard material, into the vagina, sufficiently large to prevent extrusion. If there was any kind of vaginal sphincter left, this answered the purpose, in a kind of way, well enough. It buried the uterus out of sight and out of reach, and it even kept back the prolapsed vaginal walls, if a sufficiently large instrument was used. All such hard unyielding blocks of wood or other solid material were unfitted for curative purposes. They were apt to cause great irritation, especially when encrusted with vaginal deposits, and they required from time to time to be increased in size, destroying all vaginal contractility. The globular specimens (fig. 139) were furnished with a small loop of tape, for the purpose of extraction, but that very soon rotted, and great difficulty often arose in consequence. Thousands of these are yet, I am informed, sold annually, but I know of no physician who has any acquaintance with the subject who has not abandoned them in favour of supports of a more elastic character.

Another somewhat old-fashioned method of treatment is, in certain cases, of much greater value, and should not be lost sight of, viz., a pessary of some soft porous material, which can also be medicated at will. Oakum or tenax is as good a material for this purpose as any; sponge, on account of its tendency to fester, requires incessant watchfulness. A small compressed ball of the former, saturated with decoction of oak bark or with diluted vinegar, or any other suitable astringent, can be introduced daily by the patient, and is easily withdrawn by a string previously attached to it. In the slighter cases of prolapse of the uterus or vagina, this method, combined with as much rest as possible, will sometimes effect a cure in a few weeks. The addition of glycerine to the astringent, or its occasional alternate use, is advisable when the uterus is enlarged, and renders the plan more effective. I should be sorry to see this simple method entirely abandoned. It has a distinct sphere of action, and, even in chronic old-standing cases, it is often

temporarily substituted with advantage for the more elaborate instruments.



FIG. 140.—Garrel's Air Pessary, globular.

The most generally useful form of support is an elastic ring, which can be easily compressed and elongated for the purpose of introduction. Such rings are made of various substances, originally of india-rubber alone (Mayer's india-rubber rings), but more recently of a circle

of whalebone or watch-spring, covered with a thick layer of india-rubber. The watch-spring rings (fig. 108), when properly tempered, are invaluable. They adapt themselves to the surfaces with which they are in contact; they yield to their varying movements, and, if used of a size sufficient to ensure retention, and yet not larger than what is required for the purpose, they can often be successfully replaced by smaller ones in a comparatively short time. They allow of local medication, they do not interfere with the married life, and with a very little education the patient can withdraw, clean, and replace them. I regret exceedingly that I cannot see eye to eye on this point with so competent an observer as Bantock (*The Use and Abuse of Pessaries*, 2nd ed., 1884). If it is found, as sometimes happens, that the uterus tends to dip much within their circle, this can be prevented by adapting a thin perforated diaphragm of india-rubber (fig. 109). As we shall see shortly, these watch-spring pessaries are often of great use in retroversion, with or without prolapse, and I have formerly referred to their use in the case

of uterine hypertrophy or fibroid tumours. If sufficiently elastic, and rightly fitted, they produce vaginal irritation and leucorrhœa only in those cases where every form of pessary is resented and contra-indicated.

Next to elastic rings, we may place, as suitable pessaries for pure prolapse, the elastic balls, or pear-shaped india-rubber instruments, furnished with a tube and stopcock, whereby the patient can herself inflate them with an air syringe—Garrel's pessary—(fig. 140). I cannot recommend them in the earlier stages of prolapse, but when the vaginal walls are irrepressible, or in the prolapse of old age, or during early pregnancy complicated with prolapse, they are often most servicable. It is better to insert the inflating tube at the base of the pessary, when pear-shaped, rather than at its apex, so that the former will lie lower; the bearing of this on prolapsed vagina must be obvious.

We must next mention a totally different type of prolapse pessary.

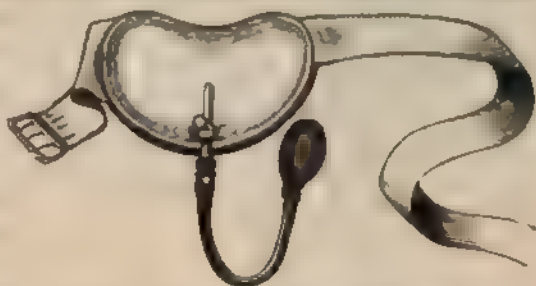


FIG. 141.—The Roser and Scanzoni Hysterophor.



FIG. 142.—Barnes's Gutta Percha Stem, with Bands.



FIG. 143.—Duffin's Pessary for Prolapse.

that which depends for its support and retention, not on the grasp it may have, however elastic, on the vaginal wall, but on some kind of stem depending from it, which is secured by a belt or other means to the body of the patient. One of the best known of these on the

Continent, and apparently in America, is the "hysterophor" of Roer, or its modifications by Scanzoni (fig. 141) and Lazarewitsch. It consists of a ball, large enough to support the uterus without distending the vagina, attached to a curved arm of spring material. The upper



FIG. 144.—Whitehead's modification of Simpson's Pessary.

end of the outer shank of this arm is connected with an external pad and belt. The flexibility or spring of the supporting arm must be varied with every case. Other globular or cup-shaped supports have their stems supported by a more or less complicated perineal band, attached also to a belt before and behind. We may instance among these Barnes's (fig. 142) or Duffin's (fig. 143), which latter is furnished

with a ball and socket joint attached to a perineal plate, supported again by a perineal band. A little practical experience is sufficient to disgust one with all bands of the kind, which are constantly affected by the excretions of the rectum, vagina, and bladder, and are usually



FIG. 145.—Cutter's Pessary for Prolapsed Uteri.

too expensive for perpetual renewal. Sir James Simpson adopted a very simple means of retaining, by external supports, a uterine pessary. Unfortunately he used it for intra-uterine stem pessaries, which, dangerous at any time, are still more so when fixed to an unyielding support, but Whitehead of Manchester very early adopted the plan for the support of a vaginal cup

or stem (fig. 144). The figure explains itself, if we regard the portion which is to be applied to and fixed over the pubes, as made of metal which can be bent by the practitioner at will, but which is stiff enough to retain its grip.

A favourite pessary for prolapse in America seems to be Cutter's.

It consists of the Roser-Seanzoni bent stem, without its flexibility or spring. The outer limb bends round the perineum, and is attached behind by an elastic cord to an abdominal belt; the vaginal limb is furnished with a great variety of terminations of hard material, which press in front of the uterus for antelexion, behind for retroversion or flexion, or, as rings and cups, support the prolapsed uterus, or as intra uterine stems straighten its flexions and hold in normal position its versions (figs. 145, 160, 171). My comparatively small experience of this variety of pessary for I seldom consider any kind of support by a stem, especially an inflexible one, advisable—is not favourable. They recall

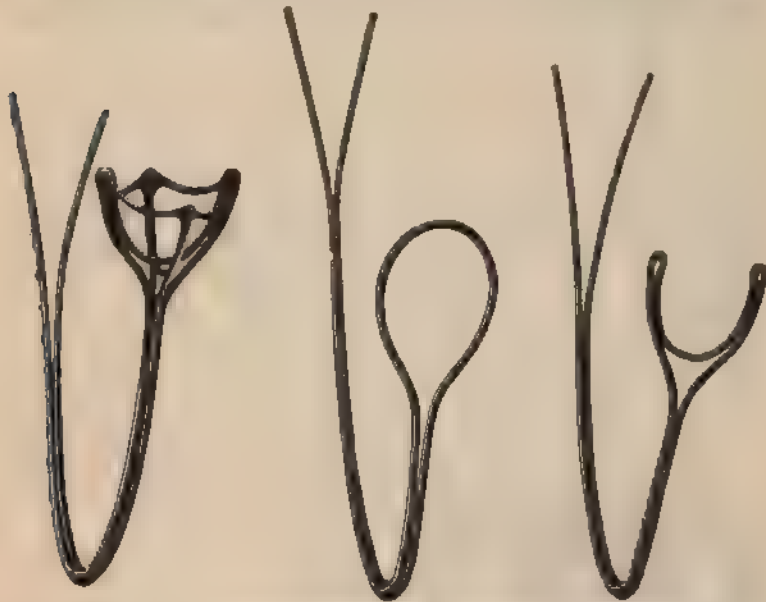


FIG. 146.—Clay's Copper Wire Pessaries.

to me too forcibly certain copper-wire pessaries without any coating or thickening of india-rubber, which I have secured for the Obstetric Museum of Owens College, and which are attributed to the veteran Manchester ovariologist, Dr Charles Clay (fig. 146).

With regard to all these externally-supported pessaries for prolapse, I have come to look upon them as instruments whose use is to be entirely deprecated until we are satisfied that, owing to the age of the patient, the recuperative and resilient powers of the vagina and uterine supports are no longer to be depended on, until we are also satisfied that the weight of the uterus cannot reasonably be expected to be reduced by medicinal or other means, and that the repair of the perineum or other

surgical proceedings do not afford a fair chance of keeping back the protrusion.

I must not, however, omit to mention a form of instrument which, although it has a downward projecting stem, is not dependent on that for its action,—the Zwanck's pessary. This instrument consists of two lateral wings, which are easily approximated for introduction, but which,



FIG. 147.—Zwanck's Pessary, cheap form, in Gutta Serena and Wire, in common use, but dangerous on account of its liability to break.

by a stem furnished with a screw, can afterwards be separated to any extent desired. It has become so well known as to be mentioned in almost every recent gynaecological work with which I am acquainted, and many slight modifications have been introduced, chiefly with a view to cheapening it (fig. 147). When the wings are expanded it is simply an old-fashioned solid plaque, with the additional discomfort of its depending stem, and with no guarantee that it will retain its position with its long diameter from side to side, and resting on the ischial planes. I cannot see how in any way it differs from the old-fashioned wooden shelves or balls, except in the mode of introduction or removal.

A former student of this school of medicine, Dr Barr of Bury, has modified it very materially. Instead of the stem and expanding screw, he has fixed upon it a stiff india-rubber ring, which permits of the approximation of the wings for introduction, but compels their separation when in situ (fig. 148). He has thus abolished one source of great discomfort in



FIG. 148.—Barr's modification of Zwanck's Pessary.

its use, and has also, although to a very slight degree, remedied the inflexible character of its lateral pressure.

With regard to all these pessaries for prolapse of the uterus, and those which are subsequently mentioned, it will be found that, although at first they may suit well, they are

liable after a time to become somewhat irksome. This may involve the necessity of a change in size or form of the pessary; but in many instances, if the patient can now be persuaded to adopt for a short time the recumbent position, or, in the earlier stages of prolapse, to lie as much as possible on the abdomen, the uterus is so far relieved as to allow of reintroduction, or possibly of their discontinuance.

Another point of general importance is to remember that the uterus resents being lifted to too high a level as much as it does being allowed

to drop too low. If our pessary is not as comfortable as it might be, it is well to see whether it does not lift the uterus too high. In fact, the insertion of a proper pessary is an act requiring time and study of the individual case. It is possible to fit an army with contract boots, and has to be done, but in using pessaries the dentist rather than the army contractor must be our model.

6. Treatment of Prolapse with Anteversion, Retroflexion, &c.—

So far, we have spoken of prolapse as if it were merely a descent of the uterus, ignoring, as in old-standing cases we are often compelled to do, the fact that anteversion or retroflexion is often a prominent feature at its commencement, and that retroversion or retroflexion usually accompanies its later stages. Its successful treatment by artificial supports will, in cases where these conditions predominate, be therefore best attained by those means which at the same time remedy the anterior or posterior displacement. If at the commencement we can in any way raise up a heavy, sub-involutcd, or chronically inflamed (and at the same time anteverted)

uterus, we may check the first beginnings of its prolapse, and we may promote its rapid decrease in size. Emmet lays great stress upon this, although he unfortunately gives us



FIG. 142 — Hewitt's Oval Lacer Pessary.

little encouragement as to how it is to be done. On the contrary, he says:—"Retroversion and prolapse are the only forms of displacement for the correction of which we possess any reliable, or, as a rule, safe mechanical means." I believe, however, that the use of the flexible watch-spring ring is of service in this as in other displacements, while other means are being used for diminishing uterine engorgement; and I have not entirely lost faith, in occasional and exceptional cases, in the pessaries afterwards to be mentioned as of service in antelexion, although I cannot attach the same value to them which their inventors, Schulze, Fowler, Hewitt, Thomas, and others seem to do. The retroversion or retroflexion of prolapse is a totally different matter. It may be the original cause of the prolapse, or it may only be acquired in the descent; but whichever may be the case, a well-fitted retroversion pessary is often the surest means of curing or relieving the prolapse. In such cases, one or other of the various forms of the Hodge pessary is generally the surest method of preventing the prolapse, while it is the only certain mechanical method of

resting the pessary. The pessary then may become an advantage by preventing the tendency of the vaginal wall to become inverted, swollen, prolapsed, &c. &c. and others have so far modified it as to make the ring of twisted metal wire, of which it is made an "interposition," and to make it of an oval with a single spring. This is represented in "Hager and Lee's Gynecological Atlas," 1874, 1875, and well sometimes be found to be a very useful pessary in pessary-construction with retroversion of uterus. The double wire-spring ring will, however, be found very effect in keeping about the same position and function. The tendency to inversion of the vaginal wall is also met, in the case of the Hager pessary, in the use of which it is sometimes furnished by "Hager," and in the case of the double ring pessary the important part of the same purpose. I have frequently found protrusion of this kind to be



Fig. 152.—Hager and Lee's Pessary.
position of the pessary when the patient is
face towards the rectum & right.



Fig. 153.—Hager and Lee's Pessary.
position of the pessary when the patient is
face towards the rectum & right.

achieved by taking a long Playfair and Thomas's interversion pessary, and using it as a pessary as a Hager or 152. The spring, which is inserted in the upper part in front of, and the other behind, the cervix uteri, in interversion, is found to act beneficially on the vaginal walls, especially the posterior one. The same result may be arrived at by using a very long Hager, and bending back the lower end so as to bring it up parallel with the main body. As far as I understand him, the same idea seems to have occurred to Emmet (op. cit., p. 375). For prolapse of the anterior vaginal wall, especially of its lower part, as well as for prolapse of the uterus, Stone's pessary (Fig. 153) is often highly effective.

To sum up the whole subject of mechanical supports in uterine and vaginal prolapse, I would say that they not only play a very important and useful rôle, but also that they may do very much to alleviate human suffering, and even to cure the disease entirely. In minor cases an

attempt should always be made to do without mechanical support, although experience of hospital out-patients must often compel us to modify this dictum. Rest, local astringents, and the treatment of uterine hyperæmia, must precede mechanical treatment, and may be expected to obviate it. When these cannot be fully carried out, or fail in effect, mechanical support must be applied as an adjuvant, or, in too many instances, as the sole resort. If retroversion or anteversion exist in any marked degree, treat them rather than the prolapse. If the prolapse



FIG. 152.—Anteversion Pessary.
Playfair's modified. Occasionally useful in Prolapse of Vagina when used with the double band downwards.



FIG. 153.—Skene's Pessary for Cystocele.

predominates, or is the sole affection, use only elastic and intra-vaginal pessaries, especially the watch-spring ring, with or without diaphragm. If driven to use external supports, use those only which are elastic and resilient. Never use solid lumps of hard material, however scientifically shaped, except in the case of old women whose days are nearly run out, who cannot well be injured by the necessity of using larger instruments in the future, and who ought not to be subjected to plastic operations which can, in their case, only interest a clinical class.

Anteflexion.

The treatment of anteflexion by pessaries is eminently unsatisfactory. The mechanical necessities of the case are obvious enough, but, unfortunately, it is too often impossible to fulfil them at all, or without considerable danger. Two leading ideas predominate. According to the one, we must find some kind of instrument which will obtain a secure hold within or outside of the vagina, while some portion of it, projecting above and in front of the rest, presses upwards into the anterior vaginal fornix, in front of the cervix, and holds up the superincumbent fundus uteri, previously elevated as much as possible by sound or bi-manual manipu-

lation. According to the other, we must introduce something into the uterine cavity which, by its stiffness, will compel the bent uterine canal to remain straight. It is assumed, of course, that all possible care is taken previously or simultaneously to remove all ascertainable pressure

on the uterus, all undue weight of the organ, and all dragging upon it by a prolapsed vaginal wall. I will simply mention a few of each of these types of pessary which have obtained most general acceptance, and then endeavour to appreciate their value.

Among those which aim at obtaining an intra-vaginal support, probably the most generally known is that of Grady Hewitt. The wide reputation of the inventor, and the extreme attention he has given to the subject of uterine displacement, have ensured this. Fig. 154 shows the instrument in its original form, as made out of a simple copper ring covered with india-rubber, and placed *in situ*. Fig. 155 shows the modification it assumes when made of vulcanite. The next



FIG. 154.—Hewitt's Cradle Pessary for Antelexion, *in situ*.

in order is Thomas's (fig. 156)—that at any rate which is most widely known as his. It consists of a Hodge pessary with an anterior projection which opens forwards by a spring. This can be closed during introduction, and afterwards protrudes upwards into the anterior vaginal fornix. He has of late years considerably modified this, the new form being



FIG. 155.—Vulcanite modification of Hewitt's Cradle Pessary. The space between the supporting knees is filled up.



FIG. 156.—Thomas's Anteversion and Antelexion Pessary, original form.

shown in fig. 157. Galabin has introduced a very popular instrument (fig. 158). The thicker portion lies in front of the cervix. Fowler's pessary (fig. 159) seems also to be very extensively used in America and England, although I confess to having only very imperfectly tested its action.

Of antelexion pessaries which depend for support on external means, I need only refer to Cutter's (fig. 160). The summit is, of course, placed in front of the cervix, and there it is supposed to remain. The prolapse modification has already been shown.

Of intra-uterine stem pessaries, as they are termed, I must first mention Simpson's (fig. 102). Its stem is composed, half of copper and half of zinc, and it terminates in a bulb which is pierced below, so that it admits a small sound for the purpose of introduction. Barnes's stem pessary (fig. 103) also combines the copper and zinc in alternate spirals, and is therefore much more flexible. I should also mention here

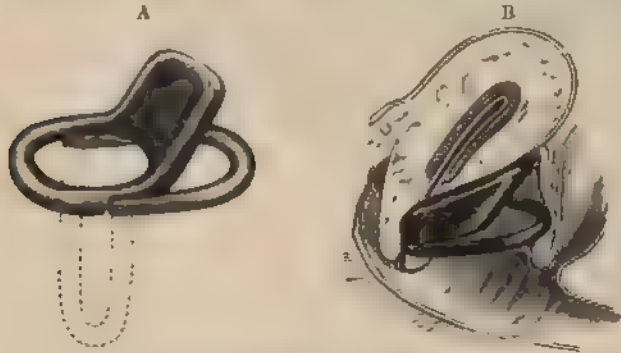


FIG. 157.—Thomas's Anteversion and Antiflexion Pessary, latest form. A, shows the instrument. B, a somewhat earlier form, *in situ*.

Meadows's glass stem (fig. 99), to which I have often referred as useful for maintaining the patency of the cervical canal after operations. In order to obviate the tendency of these instruments to slip out, expansile stems have been introduced by Chambers, Routh, Greenhalgh, Boulton, and others. Fig. 161 shows the vulcanite pessary of Chambers with the ingenious instrument for its introduction. In order to obviate the same danger, and also to avoid unnecessary and sometimes dangerous



FIG. 158.—Galabin's Anteversion Pessary.



FIG. 159.—Fowler's Anteversion Pessary.

inflexibility, Greenhalgh has introduced a stem pessary (fig. 162) of india-rubber, the expansion at the inner end of which disappears when it is being introduced on a probe, but returns when the probe is withdrawn. I have had this modified by Mr Wood of Manchester by the introduction of less than an inch of metal tubing about the centre, thereby obtaining complete stiffness at the point where it is wanted. The instrument

generally sold as Greenhalgh's is more suited in size to a bovine than a human uterus, but it can be had, if insisted on, of reasonable dimensions. Finally, these stem pessaries are to be met with, combined in various ways with intra-vaginal instruments, to assure their retention, and to combine the effect of the two. Hewitt's (fig. 163) and Wynn Williams's (fig. 164) may be instanced. They are used also for retroflexions.



FIG. 160.—Cutter's Anteversion Pessary

As regards the first class of pessaries, those with intra-vaginal support, and aiming at the direct elevation of the antelected fundus uteri, there is one great objection, viz., that they cannot directly hold up the organ, unless so tightly held by the vagina, and so secured in their position, that they can hardly be borne by the patient. This applies, I am sure, to Hewitt's, Thomas's, Galabin's, and the rest. I am borne out in this objec-

tion by many of our foremost gynaecologists, but the objection does not lead me, with many of these writers (Schultze, for instance) to entirely reject the instruments. I have fairly tried most of them, and have not, as Thomas suggests may be the case with doubters, used them upside down. Occasionally I have found relief ensue from the use of



FIG. 161.—Chambers's Intra-uterine Stem Pessary for Uterine Flexions, with Introducer.

Hewitt's, Thomas's, and Galabin's instruments, but generally I have found that they either failed to remain in the desired position, or gave rise to too much irritation to be borne, or were simply inert. Only in the cases where they were unbearable could I satisfy myself that they made any direct pressure on the antelected fundus. I feel driven to the conclusion, therefore, that their action, when successful, depends

on some different principle from that generally assumed, and I more than suspect that they act mainly by pushing forwards the upper part of the vagina, thereby pulling forwards the cervix uteri, and so lifting up the fundus. When anteflexion is very complete, this will have little or no effect upon it, but if the uterus has a certain amount of stiffness in its anterior wall, the fundus is lifted up, the moderately distended bladder gets in front of and below it, and helps to complete the effect. Whether this explanation is correct or not, it has led me to try the effect of the simple watch-spring ring, with its upper end guided to the front of the cervix, and of an ordinary Hodge pessary, with its convexity in the usual direction backwards, but with its upper bar in front of the cervix, and I think I have obtained better results in this way than I formerly did from any of the pessaries specially intended for anterior displacements. In treating of the Hodge pessary, I will refer to this matter again, but I have been recently much struck with the fact that both Schultze and Marion Sims have, each independently, modified the Hodge pessary for retroversion in such a way that it becomes, to all intents and purposes, a large Graily Hewitt's pessary turned the wrong way forwards; and in both cases the good effects are attributed to the dragging back of the cervix by pressure backwards on the vagina. I fancy that a good many of our modern modifications of the ring pessary would be the better of a little study in positions other than those intended, and that a great deal of simplification and a little more certainty might thus be arrived at.



FIG. 162.—Greenhalgh's India-Rubber Stem Pessary.

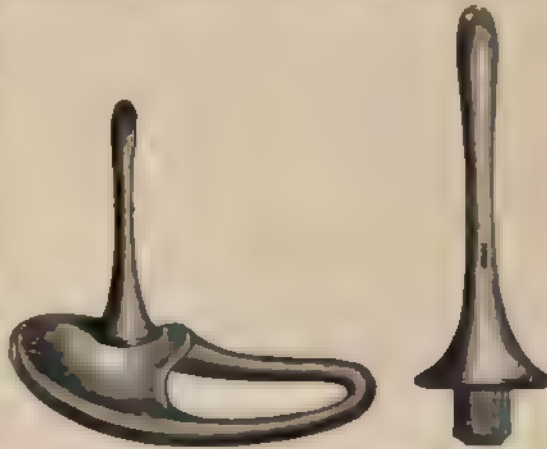


FIG. 163.—Hewitt's Intra-uterine Stem, with Vaginal Support.

I have only mentioned Cutter's antelexion pessary as one having external support, and supposed to press up the antelexed fundus, and, in the face of the general good opinion of it which most American practitioners seem to entertain, I dare hardly urge the disadvantages which it seems to me to possess. It can do no good unless it is very firmly tied up to the waist. Without that it cannot support the fundus or stretch the anterior vaginal fornix, unless the patient walks most warily. If too firmly tied, it may do incalculable mischief; if too laxly, it may press in front to-day and behind to-morrow. If I were compelled to use it, I should bend its upper extremity very much forwards, and trust to its retaining its anterior position, owing to this bend making it more difficult to turn round, and I would look to its acting in the same manner as the preceding pessaries, as a lever, with the weight at the

fundus, its power exerted through vaginal tension on the cervix, and its fulcrum somewhere intermediate.



FIG. 164.—Wynn-Williams's Intra-uterine Stem Pessary, with Vaginal Support. The end of the introducer is seen below.

Cautions and Precautions.—The intra-uterine stem pessary, if we had to deal with dead portions of a living patient, would furnish us with every requisite for the mechanical treatment of a flexed uterus. Only introduce a straight rod into a bent uterus, and it also becomes straight, and thus by pulling or pushing the lower end of the straight rod the inclination or version of the whole organ can be made and retained just as we think theoretically right. But the uterus is alive, and in many cases, although fewer than one might suppose, resents this sort of treat-

ment; and its resentment leads to endo-metritis, pelvic cellulitis, or various nervous sympathies. Hence the great differences that exist between various authorities as to the danger or utility of intra-uterine stems. Schröder, for instance, advocates their use, in preference to that of the sound, for mere reposition, and for permanent wear in many instances. Emmet, on the other hand, says they are only hurtful and irrational, no tolerance is ever really established, and their use is to be compared to a similar treatment of chordee by a straight rod. It is more pleasant to refer to foreign than to native extremes of opinion on this point, although the latter would not be difficult to quote. Simpson's and Barnes's galvanic instruments are intended to stimulate the undeveloped uterus to further development and growth. In the absence of other agents for the purpose, I will not say that they are never permissible or useful in this way, but they demand extreme caution. They should never be long enough to touch the fundus. The uterus must

be previously ascertained by the sound to be insusceptible to irritation, and the instrument should be furnished with a cord by which the patient can withdraw it on the occurrence of any pain or discomfort. It should be removed during menstruation. The hard expanding stems are still more liable to cause inflammatory results by their pressure on the uterine walls, and before using them it would be well to try whether a small elastic ring with diaphragm will not ensure the retention of the simple stem. Greenhalgh has published some remarkable curative results from the use of his india-rubber stems, results which are hardly borne out in the practice of others. I have frequently seen the stiffest and most resilient of them completely doubled up by a uterus with strong tendency to anteflexion, but nevertheless I have occasionally seen them remedy the dysmenorrhœa of anteflexion very remarkably, and with no untoward results. I do not think that the most ingenious combinations of stems, and Hodge or ring pessaries in one, will ever become popular, although I greatly admire the skill which has been shown in the production of many of them.

To sum up the question of the use of pessaries in anteflexion. In the congenital form, without dysmenorrhœa, it is advisable to avoid their use entirely. In the same form, with marked dysmenorrhœa, try fairly what can be done by dilatation by graduated sounds alone. If its effects are transient, before having recourse to incision of the cervix, try tentatively a Hewitt's or Galabin's pessary, or try first the elastic ring or the Hodge, as I have advised above. Failing to remove the symptoms in this way, the very careful use of a stem, Greenhalgh's by preference, with the modification suggested above, is perfectly allowable, if the practitioner bears in mind the necessity for incessant watchfulness. The free incision of the cervix may then be had recourse to, although in many cases the practitioner of considerable special experience will probably proceed to this at an earlier stage.

In anteflexions occurring later in life and after pregnancy, the general treatment of uterine congestion or hypertrophy is the main resource. Incisions or dilatations of the cervix are of little avail, the flexions being generally corporeal; and the elastic ring support or the appropriate abdominal belt are mainly reliable, as aids during the time while the effects of sub-involution, chronic metritis, or congestion are being combated.

Anteversio.

In accordance with what we have already seen as to the causation and treatment of anteversion, there is little or nothing to be said about special pessaries for this affection. Stem pessaries are useless or may

be hurtful, and while steps are being taken to remove the congestion, hypertrophy, or morbid growth which is the cause of the anteversion, the supports found useful in anteversion, especially those mentioned in the last paragraph, will be found to aid in the process, to relieve hyperemia, and to mitigate the difficulty of locomotion, which is sometimes a noticeable feature.

Retroversion and Retroflexion.

The treatment of backward displacements by pessary is much more satisfactory than that of those which are forwards. Of all the appliances which are used for this purpose, the pessary of Hodge of Philadelphia (fig. 165), or some modification of it, is the most generally effective. I shall, therefore, mention its mode of action somewhat fully, and refer to several of its modifications. It is now to be had in all sorts of material. Gutta-percha is very objectionable and liable to crack; copper or other flexible wire, covered with a thick coating of india-rubber, is by far the most

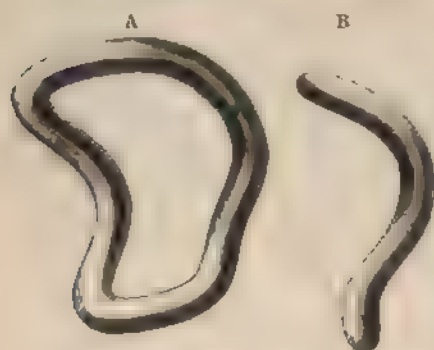


FIG. 165.—Hodge's Lever Pessary for Posterior Displacements (from his original work). A, front view; B, profile.

easily moulded to suit any particular case, the great *desideratum* being to have a rather thick coating of good material, and to have the requisite combination of firmness and flexibility in the wire. Good india-rubber does not, as some assert, tend to produce vaginitis or foetid discharges; it turns white in a short time, but any evil effects are due to errors in shape or size of the pessary, or to the neglect of the regular injections required

with all pessaries. The instrument should be easily moulded into any form by the fingers, and yet should have firmness enough to resist bending during introduction. I nearly always use this material for the first tentative pessary, and when a good specimen is met with, I should advise the practitioner to make a note of the maker and to see that he is in future supplied with the same material. Hard polished vulcanite is somewhat cleaner for wear, as is also the newer material commonly called cellulite. But a spirit lamp or a sand-bath are required to soften these sufficiently for moulding. Block-tin, or other pliable metal, possesses some of the advantages of each kind; it can be moulded by the fingers, and is not

very corrosible. On the whole, however, I prefer to use the india-rubber instruments whenever I have not at hand a perfectly suitable vulcanite one, or wherever there is the least difficulty in adjustment. Having, perhaps after several slight remouldings, succeeded in obtaining a perfect fit, it is possible to mould a vulcanite one into the same form or to get a surgical instrument maker to do so, either from a drawing or from the wire pessary. To all those who are engaged in country practice, or who have a good deal of gynecological work, I would tender the advice to provide themselves with a good supply of simple circlets of wire-rubber of various sizes. If the practitioner only knows sufficient of the subject, he can, out of these, make for himself nearly 90 per cent. of the pessaries he will ever require. A squeeze into the oval form, and a slight bend on its long axis gives him Hewitt's prolapse pessary (fig. 149). A little compression of one end of the oval and a more or less sigmoid curve gives him not only a Hodge, but almost every variety of the Hodge. Graily Hewitt's antelexion pessary (fig. 154) is easily formed, by one who knows it, out of such a ring, and an ingenious man can, by slight indentations of the surface, create not inefficient substitutes for the cross bars of some forms of Hodge, and by a little gutta serena can imitate the thickened portions of others. A skilled gynecologist, with a few of these and a few soft watchspring rings, can do infinitely more to relieve suffering than a mere pedant can with a large array of special pessaries.

The Hodge pessary does not always act on precisely the same principle. Occasionally it is used as an unyielding support, its lower end pressing pretty firmly against the anterior wall of the vagina, or against the subjacent bony structures. Its upper end or bar is thus pressed into the posterior vaginal fornix, not to bear up the fundus, as is erroneously supposed, but to draw back the cervix, and so to act by leverage in raising the fundus, the power acting by traction on the cervix uteri, the weight being at the fundus, and the fulcrum between, as with anteversion pessaries. The lever, like all levers, is freely movable, but the leverage is in the uterus, while the pessary is fixed. This is, however, by no means the most common nor the most desirable action of the Hodge pessary. It has all the disadvantages of the hardest pessaries, as explained under the heading of prolapse. Occasionally, and temporarily, it may be necessary, but should always be avoided where possible. The most valuable use of the Hodge is as a lever in itself. The lower end is free to ascend or descend, the centre clings to the vaginal walls laterally, but without undue pressure, and the upper end plays in the posterior vaginal fornix. In standing or in inspiration, the weight of the abdominal contents presses downwards and backwards, and causes the lower end of the pessary—the power—to descend. Through the fulcrum, somewhere

towards the centre of the pessary the weight that is the parts resting on the upper end, is raised, thus the posterior vaginal fornix is pushed forward, and the uterine leverage comes into play accordingly, not from



FIG. 165—Hodge's Lever Pessary
in situ

a hard and fixed pressure, but from a lever spring, as elastic as that of the box of carriages.

A Hodge pessary need thus hang as in fig. 166. Bear ever in mind that this is the true use of the instrument, and that to use it as a firmly fixed support, although rarely it is necessary, is much less common.

But various circumstances compel us to modify the Hodge pessary, or render its use unfruitful. The posterior vaginal fornix may be so small that a swinging pessary will not remain within it. A temporary use of the fixed Hodge, or temporary packing of the vagina with pledgets of cotton, well directed back

wards, or the use of a watch spring ring, will often amend this condition of matters, and distend the fornix so as to allow of the proper use of the Hodge. Those who look upon the spring pessary as very apt in this way to cause ulceration, must either have used it much too large, or cannot have had the extremely flexible instruments which are now universally obtainable. They are as soft and yielding as any air-inflated pessary.



FIG. 167—Thomas's
Retroflexion Pes-
sary

Again, adhesions may exist, which, although they admit of considerable reposition of the uterus, drag it back again so as to resent the presence of the pessary, or push it out of the fornix. Here, again, a spring ring of small size may be borne, and may slowly overcome the adhesions, or it may be necessary to gradually stretch them by means of frequent packing with carefully-placed pledgets and tampons. This method will sometimes safely overcome adhesions which did not permit of reduction at all.

Or, further, the uterus may have such a tendency to flexion that its fundus rolls over the top of the pessary, which sinks into the culmen above it, and thus adds to the uterine irritation and congestion. This may be overcome by making the upper extremity thick and bulbous, as in Thomas's instrument (fig. 167), or Greenhalgh's, where the thickening is caused by an inflated rubber pad, or by

using Galabin's prolapsus pessary (fig. 150), with the thick extremity uppermost.

Again, the lower portion of the vagina may be contractile and of good tone, and may resent the width of the Hodge pessary. It cannot swing easily, but becomes a fixture. Albert Smith first recognised this, and compressed the lower end so as to make it almost pointed, while he bent the tip backwards as in fig. 168. Most of the pessaries now sold as Hodge's have more or less of this useful modification, but there is no advantage in pointing the instrument so much as in Albert Smith's. The actual curve required, either at the upper or lower extremity, can only be determined in each individual case.

But the opposite condition may obtain. The vagina may be so loose at its lower end that an ordinary Hodge will invariably fall away. This can be remedied in two ways. In slight cases it may suffice to broaden the lower end, or simply to use the instrument upside down; or the lower end may be made a little wider, while the lower bar is entirely cut away. Left in this state, the open lever pessary, as it is termed (fig. 169), is a somewhat dangerous instrument, its ends being apt to perforate the vagina; but, well coated with rubber, and closed by a firm elastic band of the same, containing no wire, it is free from this danger and sometimes useful, although it requires very careful watching.

Another circumstance may call for modification. The extreme fundus in retroflexion may be exceedingly tender, and unable to bear the contact with the top of the Hodge, or it may be the utero-sacral ligaments which exhibit this tenderness. The former difficulty may be obviated by broadening the top bar and depressing its centre, so that its pressure is bilateral and not median; or occasionally by the use of Greenhalgh's air-inflated upper bar. When the ligaments are tender, the top must, on the contrary, be narrowed. Or an adherent or prolapsed ovary, towards either side, may make the pressure insupportable,—a very frequent cause of failure. Here we must try what can be done by depressing one corner, or otherwise as ingenuity may suggest.



FIG. 168.—Albert Smith's modification of Hodge's Lever Pessary.

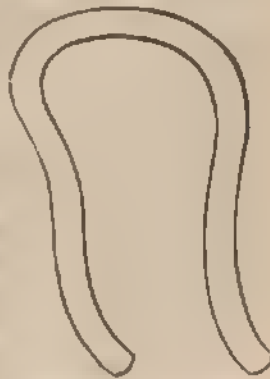


FIG. 169.—The Open Lever Pessary.

Once more, the Hodge pessary may support the uterus, but allow the vaginal wall to prolapse. We have already discussed this complication, but by filling up the centre of the pessary with a thin india rubber diaphragm (fig. 170), or by crossing it with bars (fig. 151), this difficulty

may often be overcome, though not infrequently it will call for other means (*see* pp. 297, 330).

I have thus mentioned pretty fully the variations in the Hodge pessary which may be required in posterior displacements.



FIG. 170.—Modified Hodge Pessary, with Diaphragm

A word as to the mode of introduction. Reposition of the uterus must precede insertion of the pessary. Yet I am surprised how often I am consulted in cases where I am told a Hodge pessary does no good, the practitioner having, although making an accurate diagnosis, used the pessary without any attempt at replacement. If introduction is at-

tempted by the hand alone, the instrument is held by its lower bar and introduced in the axis of the vulva, one side towards the pubes, the other towards the perineum, all pressure being made on the latter. The forefinger is then passed between its sides, and when it reaches the upper bar it must at once push it back into the hollow of the sacrum,

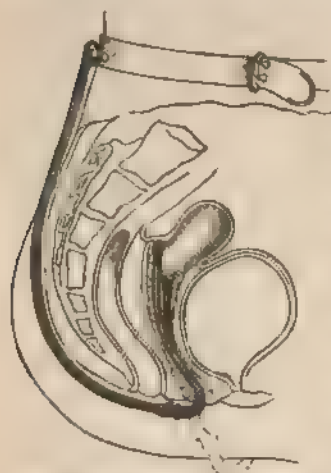


FIG. 171.—Cutter's Retroversion Pessary in situ.

while it rotates the whole instrument so as to accommodate it to the lateral slit shape of the vagina. It is thus carried behind the cervix and into position, requiring only a careful examination to see that it lies thus. But the end will sometimes slip in front of the cervix, and has a strong tendency to do so. If this happens, it must, at the cost of some pain, be withdrawn somewhat by traction on the lower end with the left forefinger, while the right, still in the vagina, slips it under and behind the cervix. In the great majority of cases, however, it is preferable to introduce the sound first, making sure of complete reposition; and while the sound is still *in utero*, the pessary is

slipped over its handle, introduced at first as before, then pushed into position as before by the right forefinger, while the sound is held by the left hand or by an assistant. Both manœuvres certainly require a certain amount of tact and experience, but that with the sound *in utero* is the less painful and more certain.

Cutter's retroversion pessary (fig. 171), with its external support, is open to the same objections as his anteversion one, but is equally approved by many writers. With great care as to the exact tension on the waist-belt, I doubt not that it is sometimes serviceable.

In obstinate cases of flexion, and in these only, the intra-uterine stem may be necessitated. When, in such cases, there is sufficient tolerance, such a pessary as that of Wynn Williams (fig. 164) or Hewitt (fig. 163) may be tried, and after a time the vaginal support may suffice without the intra-uterine portion, but I have always preferred, in such cases, to strengthen the uterus first by a simple stem, then to introduce a Hodge, modified according to circumstances, and finally to withdraw the stem and trust to the Hodge alone.

In concluding the subject of pessaries, I must again express my opinion that they have a considerable value in the treatment of uterine diseases. This value depends also, I believe, chiefly on the careful study of a very small number, on the capacity of the practitioner to mould or adapt them to the individual cases, on the care with which they are watched, and on the simultaneous observation and treatment of conditions other than the mere displacement. While apologising for the large number I have mentioned, I must equally apologise for the omission of many, all of them the outcome of careful study by personal friends and others. No ingenious practitioner can fail to invent many new pessaries—new as regards the requirements of individual cases, but often worse than useless when grouped in a manual such as this. Braxton Hicks, Playfair, Wells, Scattergood, Godson, Buntock, Gehrung, Blacklee, Hitchcock, Routh, Peaslee, Schultze, Emmet, Wright, Blake, Meadows, and a host of other writers, foreign and British, have added valuable pessaries to our list. I claim to have made myself, as far as possible, acquainted with most of them, and to have simply done my best to make such a selection as would be most useful to the class of readers I have in view. If the selection consists mainly of those in very common use, I think the fact is not to be placed entirely to my discredit. To repeat, I would strongly advise the young practitioner to study carefully, while using sparingly, only a few forms, and to be satisfied with the assurance derived from careful watching, that he knows how, with them, to do good without accompanying evil, before he ventures upon more complicated forms or inventions of his own.

CHAPTER XIII.

DISEASES OF THE UTERUS—continued. Inversion.

INVERSION of the uterus is fortunately a somewhat rare occurrence. Yet it is sufficiently common, and its effects, when it does occur, are so grave, that it must always be an affection of great interest to the gynecologist as well as to the obstetrician. According to Crosse of Norwich, whose paper (*Trans. of Prot. Med. and Surg. Assoc.*, 1845) is still the best record in English, 350 out of 400 collected cases occurred from delivery, 40 of the remaining 50 being due to the traction of polypi. It will, therefore, clear the ground for us if I say a few words as to the causation, symptoms, and treatment of the affection as it occurs to the obstetrician, following them with the details of the chronic affection, however produced.

Acute Puerperal Inversion.

The mode of production of acute inversion, from theoretical as well as practical points of view, is of great interest, although it concerns the obstetrician rather than the gynecologist. When inversion is complete, the whole body of the organ is, as the name of the affection implies, turned inside out, lying within the vagina or protruding between the thighs of the patient, the placenta being still attached, or having been previously expelled. The cervix does not, as a rule, completely share in the inversion, so that it forms a ring round the protruded mass, within which the finger or a sound can be inserted to the extent of an inch or more, meeting, however, with a complete obstruction beyond this. This inversion of the body is shown diagrammatically at fig. 172, *a*. At a later stage, or when the inversion is due to the dragging of a tumour, complete inversion of the cervix may also occur, but this is almost always associated with prolapse of the vaginal wall, and consequent cystocele. It is essentially a chronic stage (fig. 172, *b*). But in many instances, probably more than we are aware of, only partial inversion takes place. The weakest or heaviest portion of the body,—that to which the placenta is or has been attached,—bends inwards

more or less, but does not go beyond the level of the os internum at the utmost (fig. 172, *c*). Another form of inversion is described by Duncan (fig. 172, *d*), in which it is the lower part of the organ that seems to be primarily inverted. Although this condition does occur, it would seem not to be included in the ordinary sequence of events in complete inversion, although it agrees with the interpretation given by Taylor of one form of the affection.

Complete inversion of the body during parturition cannot be a very common occurrence. I have never been present at a case myself, and West states that in 140,000 recorded labours connected with the Dublin Lying-in Hospital and the London Maternity Charity, it was never once met with. Yet most gynecologists must have seen several chronic cases, indubitably dating back to confinement. One explanation of this is to be found in the fact that complete inversion is not always im-

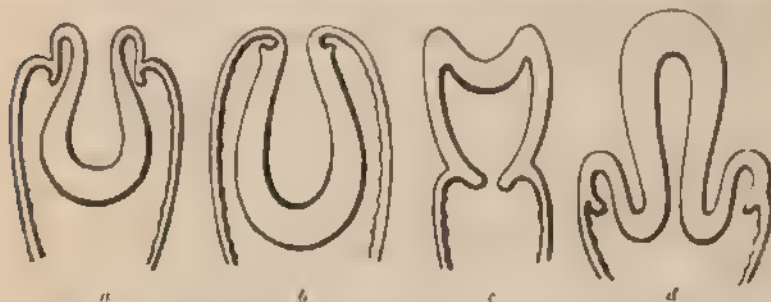


FIG. 172.—Stages and Degrees of Inversion of the Uterus. *a*, chronic inversion so ordinarily encountered; *b*, complete inversion of the cervix; *c*, partial or commencing inversion of the fundus; *d*, inversion commencing at the lower portion of the body.

mediate. It may occur only partially, as mentioned above, and this partial form may either right itself, or may, after an interval of a few days, end in complete extrusion. Such cases, if attended by a midwife or not very careful practitioner, may be overlooked, and the shock, or hemorrhage, or even death ensuing may be ascribed to other causes. I am tolerably certain that this oversight happened in all the cases of chronic inversion which have come under my own notice, except one that was non-puerperal in its origin.

Causation.—The causation of puerperal inversion has given rise to much writing and to many ingenious theories. If these are not always apparently consistent with one another, it is because, of several undoubted factors, all are not equally or invariably present. A predisposing condition of the uterus probably exists in many cases, and this may consist either of a general want of tone, making partial inversion more easy, of an irritable state of fibre, or of a tendency to fatty degeneration

in the whole or portions of the organ. As an immediate cause, traction upon the umbilical cord by the accoucheur has long held its place in professional estimation. If one thinks of the powerful action which, as by a child's *sucker*, might be thus brought into play, the idea is a most natural one. Yet any one who knows what midwives' practice is, cannot fail to see that nature almost completely resists any such danger as this. The simple and immediate complete inversion of the uterus in this way, and from this cause alone, must be infinitely rare, but in all probability the first tendency to partial inversion may often be thus given. The same remark applies to the traction caused by an abnormally short cord, especially in instrumental or artificial manual delivery.

Sudden spontaneous delivery is also mentioned as an occasional cause, especially when the patient has not assumed the recumbent position. Yet sudden delivery generally means powerful uterine action, and that, as a rule, means perfect resistance to the descent of the fundus.

Tearing of the cervix during the passage of the child would certainly appear to have a tendency to destroy much of this self-resisting power, by paralysing the action of the lower end of the uterus. I do not happen to have seen this mentioned as a cause, but it appears to me to be quite probable, although I have no actual evidence to adduce.

But undoubtedly one chief cause is to be found in some erroneous distribution of muscular contractility, leading, on the one hand, by its deficiency, to flabbiness and prolapse of the wall, which may be increased by placental traction or by pressure from above,—and, on the other hand, by its excess, leading to expulsion downwards of the protruded portion. These errors combine in various degrees to produce the relatively active or passive types of inversion of Matthews Duncan, types which exist, but which are degrees rather than separate forms of the same causation. Every one is familiar with irregular contraction of the uterus at some part of its area, and, although perhaps less familiar, irregular inertia or non-contraction, especially at the site of the placenta, is also a common occurrence. Further, a certain amount of fatty degeneration, even previously to delivery, is met with more abundantly in the latter situation; and many pathologists have described a similar condition as occurring in the neighbourhood of intra-uterine fibroid growths.

Thus there are three theories of production, all more or less correct. (1) The partial and comparative softening of one portion of the uterus causes internal prolapse of that portion, and this drags the rest downwards through the cervix (passive tendency); (2) partial prolapse of this kind causes expulsive efforts of the remaining portion of the uterus which acts as on a foreign body (active tendency), and (3) softening and eversion, perhaps tearing, of the cervix, tend to permit lowering of the

upper portion passively, and this also leads to active expulsive effects. The nearest approach therefore that I can make to a definition of the usual causation of puerperal inversion is as follows:—(1) The uterus may or may not be predisposed by disease of its walls; (2) some portion of its body, generally the placental portion, is in a state of flabbiness or inertia which tends to prolapse of that portion; (3) this prolapse may be increased by traction on the cord, or by the superincumbent pressure of the auxiliary forces of labour,—diaphragmatic, thoracic, or abdominal,—by “bearing down,” or by faulty methods of manually assisting the contractions of the uterus through the abdominal walls;¹ (4) other portions of the uterus may be normally or abnormally active and contractile; (5) if this applies mainly to the fundal portion, its effect is wholly in the direction of protrusion; (6) if it applies mainly to the lower segment its effects will be one of two: (a) either it will tend to keep back the prolapsed portion, and so limit the inversion to a partial degree and temporary existence, this fortunately being the ordinary result, or (b) if the prolapse be fairly within its grasp, it may, on rare occasions, tend to complete the expulsion, and so complete the chain of causation.

When prolapse commences near the cervix, complete inversion seldom occurs, the tonic action of the rest of the uterine muscles tending rather to withdraw than to expel it, but an occasional departure from this rule is not difficult to explain theoretically. In cases where the uterus descends only after a few days, partial inversion or internal prolapse is doubtless present from the first, corporeal contraction is efficient, but, either from torn cervix or other causes, contraction of the lowest uterine zone is deficient.

Symptoms and Diagnosis.—The immediate symptoms of inversion are collapse and hæmorrhage, followed occasionally by rapid death. The collapse will at once draw attention to the fact of something serious having gone wrong, and will lead to instant investigation, and it must be borne in mind that a well-marked partial inversion, not passing through the cervix, may cause as serious an amount of shock as one which is complete. The practised obstetrician at once grasps the uterus through the abdominal wall, to ascertain whether inertia is present, and he finds, either that the uterus is entirely absent, or that it has an unusual contour, presenting a cup-shaped depression on its surface. A vaginal examination immediately follows, and in complete inversion the state of matters is abundantly clear. If no foreign body is felt in the vagina, the cervix is rapidly examined in search of tears, and the fingers are then passed into the uterus. If partial inversion is present, a bi-manual examination can hardly fail to discover the internal protru-

¹ Expression of the placenta from above, by manual pressure, may, like all other useful procedures, be overdone.

sion and the external depression of the uterus. Two mistakes only are possible. A partial inversion may be, and has been mistaken for an intra-uterine polypus or fibroid, but careful bi-manual examination should never fail to avoid this error; or a complete inversion may be mistaken for a fibroid polypus which has been extruded along with the child. In the case of the latter the uterus will still be found *in situ*, and the pedicle of the polypus can be traced into it, or found to be adherent to one side, while at the opposite side the finger is not arrested as it is, at all points, in complete inversion. If the placenta is still completely adherent, the hæmorrhage may be quite absent, but this is usually great when it is partially or completely separated. When inversion occurs after a few days, there will probably have been some shock and hæmorrhage at the time of delivery, which are renewed, along with violent after-pain, at the time of complete protrusion. An examination would detect the same physical signs, and if the symptoms at the moment of delivery did not demand this, as they undoubtedly should, their secondary occurrence should put the practitioner on his guard.

Treatment.—Immediate shock must be overcome by stimulation, and there is no better form than the subcutaneous injection of 20 minims of sulphuric ether, once or twice repeated if necessary. A subcutaneous syringe with ergotine, morphia, and ether, should be within reach of every accoucheur. Reposition of the inversion must follow as speedily as possible. If the placenta is still adherent, it should first be removed, *secundum artem*. There is little to be gained by returning it along with the fundus, when that is possible, while there is great danger of the recurrence of the accident, especially if the placenta should turn out to be adherent. There are not the same divergencies of opinion as to the mode of reduction here as in chronic inversion. The extremity of the mass is to be grasped by the fingers, compressed as much as possible, and pushed up within the remainder, the uterus being secured and steadied by the other hand on the abdomen. On the immediate occurrence of the accident this is not a difficult proceeding to a practised obstetrician, but a few hours later the difficulties increase, the swelling becomes strangulated at its neck, and its bulk becomes correspondingly increased. Still the mode of taxis remains the same, or we may have recourse to the plan of trying to replace the last inverted part, the neck, first, as in hernia, following that up by pressure on the fundus. In all cases of quite recent puerperal inversion, the educated hand is a safer and more efficient means of reduction than any mechanical contrivance which may be brought to bear on the uterine walls.

Non-Puerperal Inversion.

Spontaneous inversion of the unenlarged uterus would seem to be almost impossible, and the impossibility has been carefully demonstrated by very high authorities. Yet it is almost impossible to resist the evidence which has been adduced as to the actual occurrence of such a thing, by equally high authorities. The same remark applies to spontaneous reposition of old-standing inversion. Both occurrences may, however, be regarded as freaks of nature, and as hardly coming within the range of practical experience or expectation. Great distension of the uterus by retained fluids has been noted as leading to inversion, occurring, no doubt, much in the same way as after delivery. But the great majority of non-puerperal inversions, at least 80 per cent., are due to the traction of polypi or other intra-uterine growths, especially, according to A. R. Simpson, of sarcomata. The mode of production needs hardly any explanation, especially if it is true that in the neighbourhood of such growths the uterus often undergoes fatty degeneration, and consequent softening and liability to internal prolapse. Such inversions are accompanied and preceded by the tumours which cause them, and the important point is to remember the possibility of such dragging down of the uterine tissue. In any case where there is a doubt as to the boundary line between uterus and tumour, when there is not a very distinct pedunculation between them, the uterus must have the benefit of the doubt in applying the ecraseur, or otherwise removing the abnormal mass. Small portions of fibro-myomata thus left behind speedily shrink and disappear; and the inversion, if it does not spontaneously return, can be dealt with subsequently to removal of the larger portion of the tumour, but a small portion of the protruded uterus removed by mistake probably means death to the patient.

Chronic Inversion of the Uterus.

Whether this results from the rare condition of spontaneous inversion, from traction by uterine growths, or, as in the vast majority of instances, from parturition, or, very much more rarely, from abortion, it is an affection demanding great care in diagnosis and great skill in treatment.

Symptoms.—The symptoms of chronic inversion are those which are common to many other uterine diseases. The most common is that of almost constant metrorrhagia, together with menorrhagia, which may in a short time wear the patient out, or may last unchecked for many years. Together with this there are great utero-pelvic discomfort, bearing-

down, tenesmus, troublesome miction, difficult locomotion, mucopurulent discharge, and anaemia. However these symptoms are grouped they imperatively call for an examination, whereupon there is discovered an abnormal intra-vaginal substance, or an extra-vaginal protrusion combined with more or less prolapse of the vaginal walls. There is nearly always a history of acute puerperal inversion, although it is astonishing how difficult it occasionally is to put this into shape, in the case of hospital patients. The tumour varies much in its character. It may remain of considerable size, or, by the process of involution, may be reduced to that of the normal unimpregnated uterus. In comparatively recent cases it is raw and bleeding; in very old cases it may be as smooth as a polypus. Careful examination (the duck-bill speculum assisting if the mass is not extra-vaginal) will show the absence of an os uteri at its lower extremity, and the presence of depressions corresponding to the Fallopian orifices. It is usually pretty sensitive, but this must not be depended on as a diagnostic symptom. Its shape varies much, from that of a bulbous pear to that of a cow's tent. At the summit of the tumour it is surrounded by the rim of the cervix uteri, into which, unless there be great vaginal prolapse, the sound enters for a short distance all round. The symptoms of partial inversion, when chronic, are much the same, and call for an intra-uterine examination, when a bulbous projection will be found within the uterus, which may give rise to greater diagnostic difficulty than the complete form.

Diagnosis.—As regards diagnosis, there are fortunately not many things for which a complete inversion may be mistaken. These are prolapsus uteri or pseudo-prolapse with intra-vaginal hypertrophy of the cervix, malignant growths from the cervix, and fibro-myomata of a polypoid form. The presence of the os uteri at its lowest extremity is alone sufficient to differentiate prolapse in any form, and this will be combined with the absence of the encircling cervix at the summit of the tumour. Malignant growths have sufficiently distinctive symptoms to render any mistake very improbable. I can hardly imagine the most compact of cauliflower excrescences of the cervix being mistaken for an inverted uterus, however raw and bleeding or even fetid the latter might be. The differentiation between polypus and inversion is not so simple. When men of the calibre of Barnes and Emmet admit having commenced amputation of an inverted uterus in mistake for a polypus, lesser men may admit the possibility of error although the signs of distinction are clear enough on paper. Symptoms and previous history go for little or nothing. The former may be precisely the same in both diseases, the latter may be utterly misleading. But there are certain physical tests which, if thoroughly used in all cases, doubtful or not, should entirely prevent mistake. The signs which are common to

a polypus and an inversion are those of a dependent tumour, around the summit of which can be distinctly felt the rim of the os uteri. Nothing should be trusted to the consistence of the swelling or to the presence or absence of tenderness when compressed. This is usually greater in the case of inversion, but not invariably. It has been stated that the tissues of an inverted uterus will sometimes be found to contract on being handled, while such is never the case with a fibroid polypus, thus presenting a differentiating sign such as has been mentioned in connection with the diagnosis of pregnancy from uterine growths. If I encountered the phenomenon, although I never have, I should feel that much weight attached to it, but it must, I think, be confined to very recent cases of inversion. The usual differentiating signs are these

(1) In the case of inversion, the sound will not pass more than a very short way into the uterus in any direction, while in polypus, it will, at one side or the other, pass the normal length, or even farther. (Complete adhesion of a polypus to the whole rim of the cervix is a very rare occurrence.) (2) Bi-manual examination, in the ordinary way, will, in inversion, reveal the absence of the uterine body above the cervix, and if the patient is moderately thin, a distinct depression will be found to occupy its place. In the case of polypus the uterus is evidently present, although it must not be forgotten that it may be retroflexed, and lie in Douglas's pouch. (3) Rectal examination will bring out still more distinctly the same distinguishing facts, especially if the vaginal tumour be drawn downwards by hook or vulsellum. The finger can thus, through the rectal wall, be hooked into the hollow upper extremity of the inverted uterus. (4) If the finger be retained in the rectum, and a sound introduced into the bladder, the presence or absence of the uterus in its normal site between the two can be very clearly made out, unless in the unfortunate presence of intra-peritoneal inflammatory exudation. (5) In the case of inversion the stretched round ligaments and Fallopian tubes are dragged within the unnatural depression of the outer wall, and may often be distinctly felt on bi-manual examination (fig. 173). (6) A careful inspection of an inversion will reveal the orifices of the Fallopian tubes, nothing of the kind being found upon a polypus.

The diagnosis of incomplete inversion in a chronic form is more difficult. If the os uteri requires dilatation this must be accomplished as in the case of supposed intra-uterine growth, the general symptoms of which will not be differential. The finger will encounter a projecting mass, and the only certain means of separating this from a polypus, a fibro-myoma, or a malignant growth, consists of a careful bi-manual examination of the uterine walls. Even if a fibroid be certainly present, this manipulation is called for for other reasons, and it will help to detect the existence of any accompanying partial inversion.

Treatment of a mechanical character is almost invariably called for. The continual hemorrhages and wasting discharges are such as cannot be tampered with. Only about the menopause, or when repeated attempts at replacement have been unsuccessful, could one trust for a time to the use of powerful astringent applications or cauterisation of the whole surface of the inverted organ. If a polypoid growth is found to be dragging the uterus down, that must, of course, be at once removed by caesarean, great care being taken to ascertain its true boundary. I have no experience of the treatment of a chronic partial inversion apart from a fibroid growth, but if I were assured of its existence I should endeavour occasionally to repress it by the end of a rectal



FIG. 173.—Inversion of the Uterus (Martini). This diagram shows especially the invagination of the Fallopian Tubes and Round Ligaments within the inverted Uterus.

bougie introduced through the os, and I should not hesitate to administer ergot frequently and freely. Uterine tonicity thus induced would, in the case of moderate inversion, tend to reposition rather than to further extrusion. At any rate I would test it. The surgical treatment of a complete chronic inversion consists in reposition or amputation. The

latter is, of course a mere last resource. Until reposition has been thoroughly tested it is not to be dreamed of. One grave risk renders amputation undesirable, in addition to the danger of hemorrhage. The cup-shaped depression of what is now the inside of the uterus, may contain, in addition to the Fallopian tubes, or even an ovary, a portion of intestine. The more chronic the inversion, however, the less is the danger of this. The rim becomes greatly contracted, and the intestine, if formerly there, is withdrawn. I never heard of a strangulated hernia produced in this way, but a little inflammatory adhesion, fortunately very rare, might lead to it.

Amputation might doubtless be safely performed in some instances

by the galvanic craseur alone, but fatal hæmorrhage may nevertheless occur, and it is very desirable, after operation, to assure the continued inversion of the stump, until its peritoneal lining has had time to adhere, and to shut out from the abdomen any purulent or septic discharge. It is therefore desirable to adopt precautions in this direction. Many methods have been proposed, which will be found described in works of a more purely surgical character, but after a very careful study of these I should be inclined to adopt the following combination: I would first insert three or four long gut threads through the summit of the mass. I would next apply the whip-cord of an craseur around the mass, below the sutures, and tighten it almost to the point of strangulation. I would then amputate with the galvano-craseur at least two-thirds of an inch lower still. Some care would be required to keep the ligatures, whip-cord, and platinum wire from contact, but intelligent assistance would easily effect this. The mass thus removed, I would carefully examine the stump, and tie with gut ligatures any divided vessel that was evident. I would then very slowly slacken the whip-cord ligature, tying again any bleeding vessel if necessary. The whip-cord (preferable to wire on account of its easy relaxability) being now safely removed, the stump would remain perforated with the long gut ligatures. The more or less sound and secure appearance of the stump would then determine whether they should be tied over its surface and all but one cut short, or whether they should be gently withdrawn, one being tied and its end being left for a few days as a hold upon the mass in case of accident. Another expedient might prove of value, viz., to insert at first, through the summit of the stump, a needle curved at a somewhat acute angle. The sharp end of this should afterwards be guarded by a button or shot. If left *in situ* for a few days, it would prevent retraction of the stump until the peritoneal surfaces were adherent. Amputation must, however, as I have said, be considered as at best a last resort. Its mortality is great when most skilfully performed, although, as is the case with many other operations, successful results have been attained when it was performed by mistake and with little precaution. If performed on a young woman, although menstruation occasionally takes place from the stump, there is evidently danger of hæmatocoele at future menstrual periods, and this should tend to limit the operation still further to cases met with after the menopause.

Reduction of the inversion is the proper treatment of the chronic disease, and such reduction is possible after an indefinite period, and, I believe, in the vast majority, if not in all cases. It is, however, by no means the comparatively simple proceeding which is involved in replacing a recent inversion. The resistance both of the uterine mass and of

the now thoroughly contracted cervical band is against us, although fortunately we are seldom opposed by the results of adhesive inflammation. The number of methods, varying very considerably, that have been proposed, is an index of the difficulty occasionally met with, not, as the student might suppose, of the frequency of the affection. Among these I may simply recapitulate the methods of Barnes, Barner, Beckenstahl, Byrne, Capuron, Courty, Duncan, Emmet, Hicks, Martin, Noeggerath, A. R. Simpson, Tyler Smith, Tate, Thomas, Viardel, Valentine, Watts and White. On the whole, the most satisfactory combination of methods would involve the grasping of the uterus with the whole hand, anaesthesia being almost imperative. With the tips of the fingers the encircling cervix is dilated as much as possible, while pressure is made upon the uterine mass with the palm. The uterus is steadied from the abdomen with the other hand, or it may be possible to depress it by one or two fingers in the rectum, and hooked over its cup-shaped upper extremity. When partial reversion is thus made, much is gained by directing the pressure, now made by the fingers upon the fundus towards one corner, the opening of one Fallopian tube, according to Noeggerath's suggestion. Reversion takes place more easily in this way than from the extreme summit. I believe that few cases would resist this simplest method of treatment if it were persistently applied, and repeated if necessary on several occasions. I have not seen it fail, but my experience has been comparatively small.

As additional expedients, I may mention Thomas's plan of pressing down a long cone of boxwood through (not perforating) the abdominal wall, into the uterine depression, thus assisting at first in the dilatation of the cervical ring. Much damage might possibly be done in this way to intervening soft viscera, and it is only applicable to the case of a thin woman. A certain amount of assistance of the same kind may be given by two or more fingers in the rectum. Barnes has recommended small incisions into the rim of the cervix so as to allow of more perfect dilatation, but there is great danger of fatal laceration occurring. Tart has attempted counter pressure, by a finger passed into the bladder through the dilated urethra, and Emmet has even suggested a free incision into the floor of the bladder for this purpose. We are not, however, all equally skilled with him in stitching such openings up again. He has also made the suggestion that, when reposition is only partial, the ground gained may be maintained by temporarily uniting the sides of the cervix with wire sutures, the wires supporting the partially reverted fundus. The bold proceeding of Thomas, which involves opening the abdominal cavity and dilating the cervix from above with a sort of glove-stretcher, has proved fatal, and in A. R. Simpson's hands was unsuccessful. Certain ingenious apparatus, with an egg-cup

shaped extremity at one end and a strong spring at the other, which is pressed against the body of the operator, have been used to take the place of the hand. I feel sure that the hand is safer and, so to speak, more intelligent in its action—more apt to vary its pressure as emergency requires, although its use may be more fatiguing. If success has not followed the persistent use of the taxis as described above, some advance may have been made, and, whether or not, there is still no reason to despair of ultimate reposition. The application of a lesser degree of force continuously maintained has succeeded in the most apparently hopeless cases. When partial progress has been made, an elastic bag, similar to a large Garrod's air pessary, or to a Barnes's uterine dilator—a "colpoclyuter" as it is frequently termed abroad—furnished with a tube and stop cock, is inserted into the vagina and slowly filled with air to as full an extent as can be borne. The pressure thus made is so equable that it is bound to act on the most yielding point, and in not a few instances it has been found that inversions partially restored have yielded to its influence. A firm strap covering the perineum and vulva easily prevents its external protrusion. The pressure can be partly or wholly relaxed and restored again at will. Water may be used instead of air and is perhaps more effective. In order to direct the pressure more certainly in the right direction, the vagina should be packed at



FIG. 174. Ayer's Uterine Repressor
for Uterine Inversion.

its upper part with steadying plugs of cotton, soaked in carbolic glycerole of only moderate strength, and placed round the uterus, but this will involve their complete renewal every two or three days. More than one case is recorded, commencing with one by Bockendahl, in which complete success has followed the use of this method, without any previous manipulation, and although Emmet considers it dangerous, and liable to induce pelvic cellulitis, I cannot think that it can be worse in this respect than violent manipulations.

Another form in which gradual and constant pressure against the inverted fundus can be maintained, is by means of a stem pessary with a cup-shaped upper extremity to support the organ, and with its lower extremity fastened to a waist-belt by firm elastic bands, similar to, but stronger than those used for Tait's uterine dilator. It is still more necessary with this form of pressure than with the elastic air or water

bag that the uterus should be retained in its proper axis by packing with tampons. The length of the stem, and its curvature, will have to be decided for each individual case, according to the length of the vagina, the amount of the descent of the inversion, and, to some extent, the resistance of the perineum, which may require the stem to be somewhat S-shaped in order to obtain accurate pressure in the proper direction (fig. 174). Dr Aveling informs me that with this, his instrument, seven cases have been cured, the time required being about two days.

CHAPTER XIV.

DISEASES OF THE UTERUS—continued. Malignant Diseases. Cancer of the Cervix
Cancer of the Body. Sarcoma

It is not my intention to enter into the many debatable questions connected with the pathology of cancer. Whether the generally received view that it is, in all cases, a product of epithelial cells, or whether that of Virchow, and Ruge and Verh, which traces it to connective tissue, or that which traces it to a fluid blastema poured from the blood, be the correct one, I am not in a position to decide. That it is more common in woman than in man, that it has certain affinities for the white races, that it is to some extent (although perhaps less than was once supposed) influenced by heredity, and that it nevertheless often seems to arise from local irritation, I assume as facts. Whether it is always the local manifestation of a general cachexia, or whether it may sometimes be a purely local affection, with a strong tendency to involve the system in cachexia I may well leave undecided, in the face of the strongly divergent opinions held by the very highest pathological and surgical authorities. Those who are interested in this question would do well to study the interesting debate which took place at the Pathological Society, in March 1874 (*Lancet*, vol. i., 1874, page 372, &c.). We must treat the subject from its purely clinical aspects. And the first point of clinical interest to be noted is that, while the affection is exceedingly common, painfully common, as a disease of the cervix, it is comparatively rare as a disease of the body of the uterus.

The necessity for a separate consideration of the disease as affecting these two separate localities is as great as, or even greater than, that for a separate consideration of cervical and corporeal metritis.

Cancer of the Cervix Uteri.

This may occur in several very different forms—forms differing not only in general appearance but in rapidity of growth, mode of spreading, liability to constitutional affections, and last, not least, amenability to treatment. But for all this the disease is one and the same—cancer. Perhaps the best division of the forms of cervical cancer is the following, which

represents tolerably clearly distinguishable clinical varieties, although as might be expected, the distinction is not always equally well marked. We may have

1. Superficial epitheliomatous ulceration of the cervix (fig. 175).
2. Soft papillomatous sprouting from the inner or outer wall of the cervix (fig. 176).
3. Mushroom like and moderately solid and firm sprouts (figs. 177 and 182).
4. Nodules of the parenchyma, tending to ulceration and excavation, (fig. 178).

1. **Superficial Epitheliomatous Ulceration of the Cervix**, the "canceroid" of some writers, is characterised by ulcerative destruction of the surface, with very little, or long deferred, induration or infiltration of the subjacent tissues. It is a true epithelioma, and has little or no



FIG. 175.—Superficial Cancerous Ulceration of the Cervix.
Schröder.

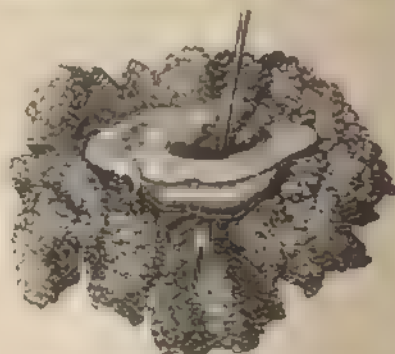


FIG. 176.—Cauliflower Excrescence of the Cervix.
Scanzoni.

tendency to papillary sprouting. At one time it was considered as not belonging to the true cancers, but its secondary affections are as truly malignant as those of the other forms. Unfortunately this variety is rare; I say unfortunately, because, when seen in its typical form, early in its career, and before infiltration has extended deeply, it affords considerable hopes of amelioration, or even of cure, by ablation. After a time deep infiltration does occur, and it becomes difficult or impossible to separate a case of this kind from one which commenced as an infiltration of the parenchyma and terminated in ulceration. This superficial form of the disease is often very slow in its progress, and many cases closely assimilate to what Sir Charles Clarke termed "corroding ulcer." Dr John Williams described this affection, in an able paper, at the Obstetrical Society, in March 1884, and gave his reasons for believing it not to be cancer at all. I must confess that when I find that Scanzoni

considers it to be encephaloid, Courty epitheloma, and Matthews Duncan—lupus, while Wm. Duncan looked upon it as lupus which has assumed an epitheliomatous character, I feel inclined provisionally to retain it as coming under the present heading, doubting the existence of two separate affections, one malignant, the other not, but which it seems impossible to differentiate to the satisfaction of any large number of observers.

2. **Papilloma**, or cauliflower excrescence,¹ is characterised by its extreme tendency to proliferate in the form of villi, which are largely covered with epithelial cells. It takes on the form of a soft bleeding fungus, which grows very rapidly, and here also there is usually very little infiltration of the hard tissues, for a considerable time. In some cases there is a very decided pedicle of hardish tissue, which would, as regards malignancy, appear to vary very much in its histological characters, and in others the papilloma is merely in addition to a subjacent, infiltrated, scirrhus or medullary mass. I have seen a papilloma so large as completely to pack the vagina, but which, after removal, left hardly any hardening of the cervix, and did not return for two years. It grows chiefly from the vaginal aspect of the cervix, and yet has not much tendency to involve the vaginal wall by contact. The true cauliflower epitheloma is, like the epitheliomatous ulcer, less relatively common than from its accessibility one might desire.

3. The **Mushroom-like Fungus** is much more dense than the papilloma. It is often not very unlike the flower of a small cockscomb, although it varies in colour from a red to a dull greyish brown. In every way it is intermediate between the last and the next variety, sometimes inclining to the soft villous pattern, with little subjacent hardening, sometimes having a very decided pedicle, and sometimes sprouting on the surface



FIG. 177. Mushroom-like Cancerous Fungus (Schroeder).



FIG. 178. Small Cancerous Nodule, with section of the same (Schroeder).

¹ The term "cauliflower excrescence" is not applied to small vascular papillomata, although there may be no intrinsic pathological distinction.

of solid malignant deposit. I believe that it is also intermediate in its mode of origin, commencing at one time as a superficial growth and extending its infiltration inwards, at another, as a sequel of a growth which was originally quite sub-mucous. For this opinion I have only clinical observation to guide me, and I do not profess to have followed the matter histologically. Ulceration and excavation follow, sometimes slowly, sometimes very rapidly, in the wake of this form, as they do eventually in all other forms of cancer, however they may originate. The part of the cervix nearest to the os uteri is usually the first affected in this way.

4. **Nodular Deposits** in the sub-mucous tissue, or at least apparently so, are the most frequent varieties of cervical cancer. They may be scirrhous or medullary, that is, they may contain a greater or less proportion of fibrous tissue, and may show a greater or less rapidity of growth. The medullary, or more cellular and more rapidly growing form, is the more common. The tendency of both forms is to approach the surface, and to give rise to ulcerations of a rapidly spreading character, with or without the intermediate sprouting described under No. 3. But their tendency is also to rapidly multiply by extension into the surrounding cellular tissue, or upwards into the uterine body, or downwards into the vaginal sub-mucous connective tissue.

In one or another of the above clinical forms, more or less typically displayed, the practitioner will encounter cancer.

Causation. I have nothing further to say on this head. The general causation is yet quite obscure, except as far as the known facts of heredity, gouty and other dyscrasie, race, sex, and climate bear upon it. With regard to the last, Haviland (*Lancet*, vol. ii., 1868, p. 737) has gathered many curious facts, which deserve following up. Continued mental depression is thought by Scanzoni and many other authorities to have a strong predisposing influence. That chronic inflammatory disease of the cervix cannot have much influence as an excitant is abundantly evident, but that it becomes one when associated with laceration is maintained by most recent American authorities. Emmet says (*op. cit.*, p. 496) "I have never known a woman to have any form of epithelial cancer of the uterus unless she had at some time been impregnated. Moreover, I believe that nearly all, if not all, cases of epithelioma, or cauliflower growth, have their excitatory cause or origin in a laceration of the cervix. It springs from the effort to repair a local injury, and may develop from a recent laceration or it may occur after a change of life. I can only say that I have seen several cases of epithelial cancer in women who have never been impregnated, and that one sees scores of cases of cancer "after a change of life," both in the breast and the uterus, without previous laceration of the cervix. I think it highly probable that the irritation of a torn

cervix has a somewhat predisposing, or at any rate a localising influence, but the truth will be more dispassionately ascertained after a few more years have passed. The influence of depressed vital forces is as certain here as in other forms of cancer in either sex, especially the depression due to rapidly-commencing senility. Few cases occur below twenty or above sixty.

Progress. The extension of nodular cancer is sometimes frightfully rapid, and may destroy life by the accompanying dyscrasia before ulceration has occurred. Some years ago I saw a case with the late Dr Ogden Fletcher, where, at a certain date, a vaginal examination was made, and detected nothing abnormal. In two weeks there were abundant nodules in and around the cervix. In two more the finger could not enter the vagina, and in about seven weeks altogether the patient died. But few such rapid cases as this occur. In a very rough way cancer may be said to last from one to two years, but much will depend on the form, the mode of extension, and the possibility of at any rate temporary removal. I have seen several cases, also, where progress has become quite stationary for considerable portions of time, two or three years, so as to give rise to considerable doubt as to the diagnosis, although the subsequent termination confirmed it. The ultimate results are alike in all cases, deep penetrating ulcers, spreading by contiguity or arising at fresh points, eating into the tissues and destroying life by pain, hæmorrhage and wasting discharge, and infiltration of the surrounding parts, leading to fresh ulcerations and to metastatic deposits in the neighbouring glands and in all parts of the body. In the first form, superficial epithelioma, the ulceration generally commences about the os externum, and may for a long time continue superficial, gnawing its way up into the cervix or towards the adjacent vagina. In the papillary form ulceration arises in the surrounding infiltrated tissue, although bleeding and discharge take place from the sprouting mass. In all forms, but especially the nodular, the bladder is reached through the connective tissue which separates it from the uterus, and sloughing of its walls produces ragged fistulae. The ureters may be early affected, and thus are produced either fistulae or blocking of their canals by infiltration, with subsequent hydronephrosis and uræmic poisoning. The rectum is less frequently opened, and the peritoneal pouch of Douglas or other portions of the peritoneal membrane, are rather included in the infiltrated mass than liable to be laid open.

Symptoms. The symptoms which characterise cancer of the uterus, in any situation, are general cachexia, hæmorrhage, foetid discharge, and pain. The well-developed cancerous cachexia is usually a sequel of the other symptoms, but in many cases it will be found that a rapid loss of weight and general feeling of malaise have preceded all else. As a rule,

hemorrhage in some degree, is the first symptom which attracts attention. It may be very slight, or alarming in quantity, at its first onset. Hemorrhage, however slight, occurring after the menopause, or produced by some slight, apparently trivial cause, is always most suspicious, and should lead to investigation, although no other symptom is present: it may assume the form of menorrhagia or of frequent slight metrorrhagia. As the disease progresses this symptom increases, draining the system, or sometimes suddenly imperilling life; but often, in the latest stage of all, the hemorrhage may become insignificant. When frequent hemorrhages are suppressed, pain is very apt to increase. Along with the hemorrhage, or speedily succeeding to it, we begin to have the very characteristic discharge of cancerous ulceration. This discharge is of a watery character, pale and dirty looking, or tinged with blood, and intensely fetid. The odor is undoubtedly due to ulceration, or to the shreds of gangrenous tissue which are cast off from papillomata.

Pain, although a characteristic symptom, is a somewhat variable one. It is not uncommon to have one's attention called by hemorrhage to a very considerable amount of nodular infiltration and ulceration, or to sprouting epithelioma, in the entire absence of pain. But sooner or later pain also comes on, as the infiltration becomes wider and involves the connective tissue, sharp, lancinating, or burning, extending to the loins, thighs, or abdomen, generally worst at night, it becomes in many instances intolerable, and the only relief is to be found in morbid and gradually increasing doses of opium or other sedatives. Every function of the body ultimately becomes impaired. Sleep is fitful or impossible, digestion fails, diarrhoea or constipation adds to the discomfort and wasting. Dysuria is often an early symptom, then perhaps follow the horrors of vesico-vaginal, and perhaps also of rectal fistula, and we are only too thankful when death closes the scene.

Diagnosis. Unfortunately, malignant disease of the cervix rarely comes under notice until pain or hemorrhage calls attention to it, before that time the disease has obtained a firm hold. A very early cancerous epithelioma might be mistaken for granular erosion, or for a chancre. Chancre, however, is excessively rare in this site, and a history should be obtainable, by cross-examination or otherwise, which should obviate error. Inoculation might be desirable in very rare emergencies, but ablation, with subsequent careful microscopic examination of the portion removed, would be the wisest course in a case where syphilitic disease was not highly probable. Granular erosion (Frontispiece, No. 2) of so small a surface is nearly always of the simplest character, and should not be mistaken for a true cancerous ulcer, which from the first has a sharply defined edge and excavated surface. A commencing papilloma could only be mistaken for a similar growth of benign character, for condyloma, or for

the fungosities of long continued or over treated chronic endometritis, with or without laceration and ectropion (Frontispiece, No. 5). The existence of the first of these non-malignant papilloma is doubted by many. Certainly there are examples which present no traces of the characteristic cancer nests under the microscope, and which do not return after ablation. I have seen one such as large as a chestnut. It is very doubtful, however, what would be the future of such a growth if left alone, and as a matter of precaution it should be treated as if it were malignant. Condylomata in this site are rare; their syphilitic origin is generally traceable, and the occasional application of a little calomel, with vaginal injections, will speedily produce an improvement which would be diagnostic. The granular condition of old metritis has a history of chronicity, and an accompaniment of cervical purulent discharge, which are totally distinct from the manifestations of an epithelioma, which has no such symptoms. The possibility of the latter being grafted on the former, or even, in rare instances, of its being excited by it, must not, however, be forgotten. A small, sessile, malignant fungosity of the more compact kind, with a slightly infiltrated base, might, I think, be mistaken for a chronic cervical metritis. I never happened to see one in so early a stage that mistake was long possible. The thoroughly protruded fungus, with thick border, projecting from smooth and apparently healthy mucous tissue, is nearly always sufficient for any one who has previously seen a sample or two of the malignant disease, and the earliest commencement of crumbling down, with fetid discharge, has generally appeared. In a doubtful case a very short observation of the progress from bad to worse would suffice for diagnostic purposes. Nodular cancer, before it has reached the stage of ulceration, presents the greatest difficulty. If the nodules are multiple, and especially if any of them are traceable into the surrounding tissues, leading to diminution of uterine mobility, without history or signs of pelvic inflammation, there can be little doubt as to their malignant nature. If it turn out that the nodules were sarcomatous instead of cancerous, the practitioner may be held guiltless of any great error in diagnosis, and little if any difference will accrue to the patient. But a single early malignant nodule is hardly distinguishable from a small fibroid of the cervix, or a limited chronic induration, or even from a deep-seated swollen follicle of the cervix. The soft pulpaness or oedema of one lip, due to uterine flexion, should be distinguishable at once. A puncture would detect a doubtful follicle. But small fibroids or hypertrophic enlargements, and single cancerous nodules, present few certain signs for differentiation. Hypertrophic enlargements are less easily isolated from apparently healthy tissue than the new growths. Fibroids and hypertrophies present a harder consistence,

Although a tumor will be not that common, even it is pale of color than the blood is not common, but this treatment is easily applied. The primary tumor, and is by its means completely cut with. The treatment of a malignant tumor appears to be much more or less the same as that of the other two, or other, but the same tendency for great tumor to be more common. For example, the same a practitioner of great experience would, I believe, make a diagnosis which would be right in a great majority of cases, but I fear this is all that can be said. It should be especially very important to make possibly be led to make use of other tests as recommended in former chapters. With these exceptions, especially the latter, feet will considerably to some, owing to absorption, while Spengler, Coombs, and others have found that carcinoma is not so affected. Positive absorption in this way must be considered as inferential against cancer, but negative results would hardly affect diagnosis. Spengler puts the diagnosis in a very agreeable form, when he says: "It is not uncommon to hear it stated that we rarely have an opportunity to see carcinoma at a very early stage, consequently if limited cases we are almost invariably dealing with a late cancer. We may with equal propriety make ourselves with this present reflection in all cases where early malignant disease is not easily differentiable, but the patient would hardly derive as much satisfaction, if the method of diagnosis were made plain to her. Apart, however, from actual removal of the affected structures and microscopic examination, there are no other signs or symptoms than those mentioned, or which can be termed pathognomonic.

The diagnosis of advanced and ulcerated cancer presents few or no difficulties. So says Netter. Thomas, on the other hand, says: "I know of no disease of the genital organs of the female, unless it be pelvic peritonitis, which so frequently gives rise to errors of diagnosis with the inexperienced. They are both examples of ulcerated cancer, but as Thomas lists of the affection, both to be connected with it includes abscessing pyometra, uterine fibroids, sarcoma of the uterus, and retention of products of conception, it is evident that he is taking together cancer of the body and cancer of the cervix. How, that these are instances of the cervix from location, papillary hypertrophy of the cervix, cystitis, ulcer, and anular hyperplasia of the cervix with metrorrhagia. We have referred to most of these in connection with early cancer of the cervix.

An advanced epitheliomatous ulcerated cancer can be mistaken for anything else. The deep seated ulceration, as before, its almost certain association at this stage with multiple malignant deposits, its benign stages, pain, and odor are everywhere. Only the rarest form of chancre could lead to error.

Advanced cauliflower excrescence (fig. 176) is also like nothing else. One can just imagine a bleeding inverted uterus, or a partially sloughing and fetid polypus being mistaken for a large malignant papilloma, but only by one who would not take the trouble to investigate the history, the physical properties, and the attachments of the mass. A malignant, solid, mushroom-like sprout ulcerates early and characteristically, the ulceration usually commencing at the part nearest the os uteri, and having the sharp overhanging edges, and apparently deep, fetid, cavity which are so diagnostic of cancer.

As regards nodular cancer, when at all advanced, there is one great distinguishing feature, the fixation of the uterus which it causes. Mere non-malignant enlargement of the cervix leaves the uterus mobile. Cancer fixes it early. The infiltration spreads rapidly to the surrounding connective tissue, and even when the finger cannot detect its nodules there through the vagina or the rectum, it ascertains the partial or complete immobility of the organ in every direction thus produced. The exudation of lymph or blood in pelvic disease has a similar effect, as may have also the existence of large fibroid growths of the uterus itself. In the absence of these, fixation of the uterus is a sign of great and almost pathognomonic value in cancer, even from a very early stage; and, apart from the fact that non-malignant pelvic exudations have usually a well-defined history of their own, they have special tendencies to assume characteristic forms and invade particular portions of the pelvis, as described in Chapter XIX.

Ulceration, based upon the hardened nodules of the immobile cervix, is perfectly characteristic. It has sharp nodular edges excavated underneath, crumbles superficially under the touch, and yet the crumbling surface is felt to be superficial, and its factor is now excessive. The radiating fissures of a torn and everted cervix uteri, with its covering of eroded or granular mucous membrane, are not combined with immobility of the organ, and their history and appearance are sufficiently diagnostic to one with any experience of the two affections.

In making the diagnosis of any case of cancer, extreme gentleness of touch is desirable. The finger should be passed along the posterior vaginal wall, scarcely touching any projecting mass, if possible, until it is beyond it, and then should gently palpate it with the pulp of the finger turned towards it. Without this precaution great hemorrhage may be caused. The speculum should not be used except in doubtful cases, or for purposes of operation, or other necessary treatment.

Treatment of Cancer of the Cervix. The treatment of cancer of the cervix may be divided into (1) the medicinal agents administered internally for the cure of the disease or the palliation of its symptoms; (2) the local medicaments which are applied for either of these purposes;

and (3) the operative means which are used, also with either of these two aims.

Medicines are, I fear, of little or no avail as curative agents. From time to time some enthusiast imagines that he has discovered such an agent. But such discoveries speedily fall into oblivion, under the test afforded by general experience. Perhaps two only have had, or still retain, any hold on professional estimation—arsenic and iodide of potassium. No one with any extensive experience can have failed to see, in many instances, a wonderful improvement in the general condition of cancer patients under the steady use of small doses of arsenic. It appears to me to act much in the same way as it does in certain cases of anæmia. The general condition is improved, and, if the local disease were not there, the so-called cachexia might perhaps be diminished. I do not feel justified in withholding it in any case where I think I have removed the local disease, or where anæmia is a leading symptom. Iodide of potassium is used almost quite empirically. I have never seen a case of cervical cancer materially influenced by it, but I have a list of seven cases of what I believed to be cancer of the breast, and two of the tongue, all of which diagnoses were confirmed by surgeons of great experience, where every trace disappeared under the use of this remedy. Both tongue cases and one of the breast cases had reached the stage of ulceration. Knowing what we do of the alliances and resemblances of syphilitic growths and cancer, all these cases may be fallacious as guides, although every care was taken to exclude mistakes in this way. I have also seen three or four cases where apparently glandular cancer or sarcoma of the breast, coming on about the menopause, while fibroid tumours of the uterus in the same patients were shrinking, has disappeared during the administration of full doses of iodide of potassium.

As palliatives, the use of internal remedies is more extensive. There is a stage at which opium may be said to be our sole resource. Other sedatives or narcotics may be required, according to the idiosyncrasies of the patient, but opium is the sheet anchor. Beware, however, of beginning too early with large doses. The pain of cancer sometimes subsides for a considerable time, and we have no right to deprive the unfortunate patient of a clear brain during those penultimate weeks or months of a closing life. Medicinal astringents, given to arrest hæmorrhage, serve little other purpose than to disorder the digestive organs. Even ergot is liable to do more harm than good, by promoting uterine muscular contraction. The dietetic treatment of a case of cancer may be summed up briefly: avoid stimulation further than seems absolutely necessary, give as much bland and nutritious food as the patient can digest, carefully regulate the bowels by the mildest aperients available, and extract what benefit you can from iron.

quinine, cod liver oil and other agents of a similar kind. Mr Thomas Windsor, one of the most careful and accurate observers with whom it has ever been my pleasure to be associated, had a case, not published I believe, in which he first removed the eyeball and orbital contents and afterwards some portion of the bones, unsuccessfully, for cancer. The fungus returned and could not further be interfered with. The patient perfectly recovered after living for some months, on the advice of a quack, on nothing but small biscuits of flour and water and without salt. This is the only fully authenticated fact of which I am personally cognisant in favour of the starvation treatment of cancer. Neither I nor my patients have ever been bold enough to try it, or to rely for any long time on any of the dietetic cures yet recommended.

Local Applications. (a) Curative.

No one, I think, now-a-days dreams that we have specific agents which can burrow into the tissues in search of the roots of a cancerous tumour and dig them out, while leaving intact the surrounding healthy tissues, although it is impossible to maintain the inherent impossibility of such substances. Such proceedings are mainly confined to quacks who prey upon the ignorant or despairing. The attempted cure of cervical cancer by caustic applications is reserved for cases of epithelioma, which are limited in extent and apparently unaccompanied by deep infiltration. Even here the results are, I fear, always evanescent. In patients who object to the use of the knife, they may be tried, and if tried, the most powerful caustics are the only ones available. Bromine in solution (1 part in 5 of spirit) I have found much less effective than it is usually stated to be. Its selective action for the malignant tissues is I fear but a remnant of old superstitions, yet with that reverence for authority of which one can never entirely divest oneself, I occasionally try it again. The potassa fusa cum calce surely destroys everything with which it comes in contact, and a small malignant fungus may be thus entirely got rid of, but it comes again. The utmost precaution is necessary to avoid the action of the deliquescent salt from spreading. The duck bill speculum should be used, the cervix thoroughly exposed and dried. Plugs of cotton soaked in vinegar are placed carefully around it. The caustic mass is firmly pressed for a few moments against the affected part, and the vaginal cavity is freely washed out subsequently with vinegar diluted with two parts of water. A plug soaked in glycerine and vinegar (equal parts) is carefully left in contact with the os uteri for some hours. Chromic acid is less effective, and nitric acid is too superficial in action. I suspect that in a few years nothing will be heard of these caustics in relation to cancer, except as to their occasional use after excision, when it is doubtful how far the diseased parts have been entirely reached. As an agent of this kind chloride of zinc has

many warm advocates. The galvano-cautery knife can do all that they can do, and with much more definite regulation.

(b) *Palliative.* Local applications can, however, do much as palliatives, by checking hæmorrhage and lessening factor, and so prolonging life and diminishing misery. Pessaries and suppositories of morphia and belladonna I consider as medicines rather than local applications.

For the relief of fatal discharge thymol is one of the most efficient agents. It is less irritating, less offensive itself to many people, and less liable, when constantly used, to induce eczema, than carbolic acid. A solution of 1 in 800 parts of water, with the addition of a little glycerine, may be injected very gently and very frequently, or a white vaseline ointment with 20 grains to the ounce, the thymol being dissolved by the aid of heat, may be smeared over the fungoid mass. Good carbolic acid is not, however, offensive to all, and a 2½ per cent. solution, or a vaseline ointment of 1 in 40, may be used. Weak solutions (gr. ¼ - ½ ad 5i) of bichloride of mercury may also be used. Iodine is hardly applicable for deodorising purposes alone, but carbolised iodine, that is a combination of carbolic acid 1 part, and tincture of iodine 7 parts, is a valuable application, in solution or otherwise. A completely new combination ensues, and the iodine is decolorised. I believe this combination was first recommended by Dr Boulton. Iodoform has, to my sensations, such a vile odour of its own, which nothing thoroughly covers, and which so enters into combination with the factor of cancer, aggravating both, that I have almost ceased to use it for cancer in private practice. In hospitals, or where one can depend on very careful application of just sufficient quantity to the right spot, it is more serviceable. The investigations now being carried out by my friend Dr Priestly, under the direction of the British Medical Association, may perhaps tend to show that it has other properties which would still further commend its use. Salicylic acid is free from all odour and is equal in many respects to the above mentioned remedies, as far as concerns the parts with which it can be placed in actual contact; 30 grains dissolved in half an ounce of flexible collodion is a popular remedy for warts and corns: I have recently applied it to fungating masses of cancer, when the application was possible, without exciting much hæmorrhage, and I can recommend the practice as producing something more than a mere deodorising effect. The powerfully hypnotic and somewhat depressing action of chloral hydrate have deterred me from using it locally in sufficient quantity to be of use as an antiseptic.

For the arrest of hæmorrhage, various local remedies are available. The carbolised iodine and the preparation of salicylic acid just mentioned are often very effective, but more powerful styptics are frequently required. The glycerole of tannin is one of these. The perchloride of

iron (liq. ferri perchlor. fort.), is also a powerful astringent, requiring to be carefully applied to the bleeding mass, and in obstinate cases almost pure carbolic acid may be safely painted on the raw surface if it be not very large. Sulphate of zinc, alum, or any of the vegetable astringents suitable may be applied in powder, but the result is a pultaceous clot, which is difficult of removal without further hæmorrhage. Plugging the vagina for the hæmorrhage of cervical cancer should never be had recourse to without grave consideration. If styptics fail, and partial or complete removal of the disease is not possible, it may, however, become a necessity. If done at all, it must be done carefully and effectively with the aid of the speculum, and the utmost care must be exercised in removing the plug.

Operative Procedures.—In every case of operation upon a cancerous cervix the operator should clearly place before himself the question, Can I remove the whole of the cancerous structure, and so give the patient a faint chance of complete recovery, or at any rate of arrest for a considerable time, or can I only remove such portions as may be necessary to put a temporary stop to hæmorrhage and foetid discharge, and so prolong life for a short time or render it more endurable? Moreover, it is his duty to give full information to the patient or her friends upon the point. I know of no greater cruelty or fraud than the performance of an operation, perhaps of successive operations, upon a patient in whom pain and hæmorrhage are greatly in abeyance, and in whom infiltration is so great that extirpation is impossible, while hopes are held out of a successful issue.

In certain cases, too seldom seen by the practitioner in time, there is a reasonable prospect that the whole of the diseased tissues can be removed by operation on the cervix. These cases are those of—(1) a superficial epitheliomatous ulcer of the cervical canal or surface, with no evidence of deep-seated infiltration; (2) an epitheliomatous fungus, however large, where there is the same absence of evidence that the sub-mucous tissue or surrounding parts are infiltrated; (3) nodular cancer, ulcerated or non-ulcerated, which is confined to a part of the cervix, or which is within the reach of the knife or galvanic cauter, or which may, by good fortune, turn out to be not cancerous after all. In all these cases ablation is justifiable and desirable, even in the absence of severe hæmorrhage or pain.

In the first instance—that of the superficial ulcer—the knife is the only satisfactory means. The cervix must be fully exposed by the duck-bill speculum, and drawn down within reach of easy manipulation. With a fine sharp-edged knife the cervix is then thoroughly *pithed*—that is, a deep shaving is cut away from the interior, all round if necessary. The portion removed should be wedge-shaped (fig. 132), the point of the wedge

terminates at the os internum, while the base includes the whole thickness of the cervix. The finger is then used to detect whether, in the raw surface, any hard infiltration points are to be felt. If so, they must be shaved away as far as the thickness of the cervix will permit. An expert operator, like the late Marion Sims, has occasionally left behind only a mere shell of the upper part of the cervix, little thicker than paper, and he has published some few permanent cures, and many cases of prolonged recovery from all symptoms of disease. After the operation it is advisable to touch the whole raw surface with Paquelin's cautery. This both arrests hæmorrhage and diminishes the risk of septicæmia. Plugging of the cervix for several days afterwards with carbolic glycerine plugs, or with more potent astringents, is also desirable, as secondary hæmorrhage is not uncommon. It is doubtful how far any process of stitching together the edges of the V-shaped incisions thus made is of advantage.

For the removal of fungoid growths, especially if large, the galvanocautery cerascur is the most satisfactory method, and it must be made to include as much of the cervix as possible. If induration extend upwards into the canal, the knife must subsequently be used as above indicated.

In nodular cancer, or suspected cancer, the cervix must be freely removed as recommended in certain cases of hypertrophy. The galvanic wire is often superior to the knife, but the latter may come to its aid as in the removal of epitheliomata.

In advanced cancer, removal of as much as possible is still advisable in certain cases. Where there is deep infiltration of the cellular tissue, with fixation of the uterus, or where the uterine body has become affected, or where ulceration has spread to the vagina, there can, of course, be no chance of cure; but hæmorrhagic and other discharges may be greatly abated, and the patient's health temporarily but very materially restored, the cachectic appearance disappearing for a time. If the general symptoms are quiescent, although the disease must be advancing, no operation is permissible under these circumstances. Pain is not in itself an indication for interference, for pain is nearly always due, not to the mere cervical disease, but to its extension beyond the cervix, and beyond the reach of operative means. Hæmorrhagic and other discharges of a rapidly-wasting character, and which cannot be controlled, are our sole warrant. For the removal of these we must simply remove as much of the bleeding mass as is possible with safety. The cerascur will cut away the bulk of a protruding mass, and the curette, scoop, or knife may be freely used on such soft portions as escape its influence. The patient or her friends must always be fully informed of the nature and scope of the operation.

To sum up the surgical treatment of cancer of the cervix :

1. If diagnosed in its earliest stages, which it seldom is, remove at once by the knife, cautery, or cerasneur, as above directed.
2. In very early epithelioma, caustics, especially potassa cum calce, may be tried, if the patient objects to operation.
3. If complete ablation is impossible, relieve pain, and check hæmorrhage and fœtor by internal remedies and local applications as above.
4. When discharges are great, and not amenable to local applications, remove fungating masses as far as possible, and return if necessary to local applications.

It will be seen that I have said nothing of the removal of the whole uterus. I prefer to discuss this formidable proceeding after considering how cancer affects the body of the organ.

Cancer of the Uterine Body.

Cancer of the uterine body (fig. 179), when not an extension from cervical cancer, is fortunately very rare, furnishing probably not more than 2 or 3 per cent. of the whole number of uterine cancers, although A. R. Simpson and some other writers give a very much higher proportion. It is a strange fact that, unlike cervical cancer, the majority of cases are met with in nulliparæ, and this would doubtless be considered as confirmatory of their opinions by those who, like Emmet, trace cancer of the cervix in all cases to cervical tearing after labour, although it may also, and with more force, be pleaded as showing that uterine cancer, like all other cancers, may be totally independent of any such traumatic causation. It is met with as an epithelioma or as a nodular encephaloid infiltration, leading to a proliferating fungus in the one case, or to a single or multiple solid enlargement in the other. If life is sufficiently prolonged, there is ulcerative excavation of the uterine wall, infiltration of surrounding tissues, and metastasis to the glands or elsewhere, just as in cervical cancer. The epitheliomatous fungating variety is the most common, the variety, by the way, which, in the case of the cervix, most often attributed to traumatic causes.



FIG. 179. Cancer of the Body of the Uterus, affecting a large portion of the mucous lining (Schröder).

Symptoms and Diagnosis.—The symptoms are those of pain, hæmorrhage, foetid discharge, uterine enlargement, and induration, and, as the former three of these are generally more early developed than in cervical cancer, it might be supposed that the corporeal form would be more easily diagnosed. Such is not the case however, for, independently of the fact that the sources of the discharge are out of reach, there are many other affections which may give rise to most or all of the same symptoms, and, as many of these are exceedingly common, suspicion naturally turns in their direction. An enlarged uterus, with pain, hæmorrhage, and factor may mean cancer of the uterus, with which, for the present, we will associate sarcoma, but it may also mean several other things more frequently encountered; five especially may be noted—fibroid tumours or polypus, chronic metritis, retained products of conception, intra-uterine non-malignant fungosities, and, lastly, foreign bodies.

Fibroid tumours or polypi constantly give rise to all the above-mentioned symptoms except factor, and even this may be present, and, I think, undistinguishable with certainty from that of cancer, when sloughing of the mass, or of even of a small portion of its covering, occurs, or when there is prolonged retention of discharges. I can recall the case of a lady suffering from fibroid tumour—as diagnosed by myself, by my colleague Dr D. L. Roberts, and by a most intelligent family practitioner. She was subsequently seen by two gentlemen, whom I should regard as almost the highest possible English authorities in surgical and medical gynecology respectively, who diagnosed cancer, and counselled non interference. Yet a *post-mortem* examination showed that she died from nature's attempt at enucleation of a fibroid. There was a cancerous family history, and intensely foetid discharge towards the close; but I had the advantage of seeing the case early. The only diagnostic means in such a case is free dilatation of the cervix and examination of the uterine wall with the finger. If a large, firm, smooth tumour is felt, the chances are very greatly against its being malignant. If ulceration exists, a careful examination of the discharges may aid in diagnosis.

Chronic metritis also gives rise to moderate enlargement, to hæmorrhages, and often to pain, and, if there be retained menstrual products, to factor. Dilatation and digital exploration are again our sole resource, and mistakes can only arise if we find any soft thick vegetation at any point or points. This might be malignant papilloma or merely the granulations of chronic endo-metritis, or, much more rarely, a soft mucous polypus. An expert might, I think, nearly always be relied on to make the diagnosis by his *tactus cruditus*, together with his practical skill in eliminating and putting together the points in the history of the case, but removal of some portion of the mass, by curette, will solve the

difficulty, if the fragment be subjected to competent microscopic examination. It is very easy, however, to follow the prevailing example, and to speak of microscopic examination of such products as if it were the simplest matter in the world, or as if an accurate knowledge could be attained by the study of a few woodcuts. I believe that no reliance is to be placed on examinations of the kind unless the examiner is to a certain extent an expert in the making and staining of sections, and in other processes which involve a degree of skill to which I fear it will be very long before the average practitioner can attain.

Retained placenta or other products of conception have a history of their own, which should put us on our guard; dilatation, and examination of removable portions, may reveal placental or membranous structures or even the cysts of hydatiginous moles.

Foreign bodies in the uterus are rare, but I have known a portion of a stem pessary, and of a broken sponge tent, produce symptoms closely allied to those of cancer. In the latter case, the factor, after three months' retention, was declared to be pathognomically cancerous. I was enabled to detect the difference, not by my sense of smell, but from having received the confession of the practitioner in attendance. It is not the sole instance in which error has been avoided by consultation.

The diagnosis of uterine cancer from surrounding pelvic inflammation, with or without abscess, should not be difficult to one who will study the historical facts and make a careful bi-manual examination. The combination of pain, hemorrhage, and factor, with uterine fixation and surrounding nodulation, and without a very clear history of fever and inflammation, must, in the case of pelvic inflammation, be very rare.

Treatment.—The treatment of corporeal uterine cancer, when fairly developed, and that is almost tantamount to saying when rationally diagnosed, is a very hopeless business. Pain may be relieved by opiates or other sedatives. Hemorrhage may be checked by swabbing with the strongest astringents, or occasionally by plugging the cervix. Factor is less under control than in the cervical form, but may also be diminished by swabbing with antiseptics, or by very careful intra uterine injections with a double catheter, or still better by the insertion of soluble pencils, with carbolic acid, iodoform, or other antiseptics incorporated in gelatine (*see Medicated Tents*, p. 218). The main practical question is, Can surgery do anything to completely remove the disease? No hope can be held out of completely removing even a commencing malignant papilloma, or of dissecting away with the knife any suspicious underlying infiltration. All that can be done in this way is to give temporary relief from hemorrhage, by scraping off with some form of curette or scoop the softest portions of the sprouting mass. One procedure alone could give any hope of removing the disease,—removal of the entire organ; and this is an operation of so

serious and so difficult a nature, so essentially modern in its rational conception, and upon which there are as yet so many differences of opinion, that it would be well still to delay its notice until we have spoken of the remaining forms of malignant disease which may affect the uterus, and which may call for the employment of such extreme measures.

Sarcoma of the Uterus.

In deference to the prevailing pathology of the day, which looks upon sarcoma as an affection of connective tissue, and upon cancer as an affection of the epithelial element, I have separated these two affections, both truly malignant when fully developed. There is, however, a vast amount of confusion among our pathologists and gynaecologists as to the differences or affinities which exist between carcinoma and sarcoma, and the relation of each of them, in the way of evolution, to non-malignant growths, is as yet almost unknown. As regards sarcomata of other organs especially, I have seen many amusing differences of opinion between the clinical practitioner who removed them and the pathologist who examined them, differences which subsequent watching of the patient solved as often in favour of the one as of the other.

Speaking not as a histologist or pathologist, but as a clinical observer who would desire all the help he can get from pathological histology. I have no hesitation in saying that, when sarcoma of the uterus, ovaries or other organs, chiefly resembles clinically the fibroid or non-malignant diseases of those organs, it should be treated as such, and that when it clinically resembles cancer, it should similarly be treated as cancer. The same remark applies to adenomata, myxomata, and other allied affections, the differentiation of which, when affecting the uterus, must be made rather in the dissecting-room than at the bedside. It is to be hoped that a fair proportion of the future British practitioners will be able to accomplish the former task, the latter will, I fear, long remain impossible to them.

Sarcoma of the cervix, that is, non-cancerous disease of the cervix, of a decidedly malignant character, tending to ulceration, and extension by contiguity or metastasis, and yet of purely sub-mucous origin, is rare unless we admit our ignorance as to the difference between nodular cancer and sarcoma. Sarcoma of the body of the uterus (fig. 180) is, on the other hand, more common than cancer, like which, it may appear in a nodulated interstitial form, hardly differing from fibroid growths, but having generally less apparent capsulation. In all clinical particulars, symptoms, multiple character, or the like, sarcomata may resemble fibroid tumours at first, and there is the strongest possible reason !

believe that they may gradually become developed from true fibroid growths. The development of interspaces with mucoid contents, constituting myxosarcoma, is closely analogous to the formation of the fibro-cystic growths. Like cancer also, sarcoma may develop upon the internal wall, not with early sprouting as in the epitheliomatous form of cancer, but as a swelling or protuberance very like a soft sub-mucous fibroid. Microscopically it more often shows the presence of the round than the spindle-shaped sarcomatous histological element. The mass may to the eye resemble a pure fibromyoma, or may have a much softer and more encephaloid appearance. Ulceration is slower and less complete than in cancer, but in some cases there is little distinction in this respect, and the relation of the two forms of disease is still further shown by the occasional inter-proliferation of epithelial cells (the carcinosarcomata of Klebs). Metastatic deposits may take place either in contiguity or at a distance. I have seen metastatic deposits of a true encephaloid character following the removal of what so good an observer as Mr Jonathan Hutchison declared to be true sarcoma of the testicle. I cannot see how any one who has any strong opinion on the doctrine of evolution can fail to see in all these facts, and in spite of certain specific histological differences, a gradual scale of development or retrogradation from the benign fibromyoma to sarcoma, and again perhaps to cancer.¹

Symptoms.—Pain is later than in cancer, earlier and more common than in fibroids, but there are many exceptions to this. Haemorrhage



FIG. 180.—Sarcoma of the Body of the Uterus (Schroder).

¹ If, as has been
often
found

the growths may be products of the gouty
diathesis arise, and there may yet be
these affections.

may be early and great, as with sub-mucous fibroids, and from the same increased hyperæmia. Later it may be due, as in cancer, to ulceration. Factor is less common than in cancer, but there is often the same watery discharge.

Diagnosis. Setting aside chronic metritis, and the retained products of conception, of which sufficient has been said above, the main question arises, Is the disease fibroid, cancerous, or sarcomatous? This cannot be always answered at once. When ulceration has not occurred, the disease mostly resembles fibroid tumour. Its softer consistency and its rapidity of growth may point to the malignant type. If it assume a polypoidal form, removal and subsequent examination will afford a means of differentiation. The so-called recurrent polypi of some writers are examples of sarcoma. When softening and ulceration have occurred, sarcoma mostly resembles cancer, and a careful examination of scrapings by the curette must decide, if possible, the difference; but in all cases of doubt we are driven back on the sound practical rule of treating the case as we would do in fibroid or cancerous disease respectively.

Treatment.—I have nothing further to say on this head beyond what is involved in the last sentence.

Excision of the Uterus for Malignant Disease.—We have already spoken of removal of the uterus in the case of irreducible inversion, and have expressed the opinion that it should rarely if ever be required. In relation to fibroid tumours also, we have decided that various other means of treatment, including removal of the ovaries, when absolutely necessary, present such chances of success that the terrible alternative of removing the uterus, together with an immense fibroid enlargement, should with almost equal rarity present itself. Excision of the whole uterine body and cervix, for malignant disease, has been recently introduced to the profession by Freund of Breslau, although isolated attempts in the same direction had been previously made by Santa, Blundell, Becamer, Henning, and others. The physician or general practitioner will not be called upon to undertake such an operation under any circumstances, so that we shall not concern ourselves with the methods and appliances needful for its execution. But it may fall to the lot of any one to decide the question, yea or nay, and it is therefore desirable to obtain as clear views upon the subject as are as yet obtainable.

The results, so far, are by no means encouraging. Thomas, in 1880 (*op. cit.*, p. 598), gives, quoting from Schmidt's *Jahrbücher*, the results of proceedings in this direction:—"Freund had performed fourteen operations, with eight deaths, five recoveries, and one incomplete operation. Of the five recoveries one died from a return of the cancer, one from pleuritis, and a third is now suffering from a return of the cancer. Of the remaining twenty-five operations of which the results are known "

(they will certainly omit few successful ones) "which have been recorded by various operators, nineteen died, five recovered, and in one case the operation was incomplete. Of these five successful cases, in three the cancer returned." The net result in the thirty-nine cases is, that twenty-seven have died from the operation, leaving twelve to account for. But of these twelve, two were *incomplete cases*, i.e., they left the patient alive, I suppose, but dying of cancer. Ten remain. Of these, one has died of pleurisy. We will put her down to the credit of the operation, and suppose that there was no septic or malignant cause for it, and that she would not have had a return of the cancer. Nine remain. Of these, four are known to have a return of the cancer, of whom one has already died of it. Four remain, of whom all that we can say is, they have not yet been reported to have died of cancer. I expected great things from the discussion of this subject at the meeting of the British Medical Association in August 1883, but have found nothing to alter the impression conveyed by the above statistics. The discussion at the Eighth Annual Meeting of the American Gynecological Society, held at Philadelphia in September 1883, was still more antagonistic to the operation. Dr Jackson of Chicago, who introduced the subject, "knew of eight cases in Chicago, seven of which were fatal." Of the fatal cases only one (his own) had been published. He estimated Freund's mortality at more than 72 per cent., exclusive of those patients in whom the disease might return (*Am. Gyn. Trans.*, vol. viii.). With these figures, and those of Hegar, Kaltentbach, and Puggia before me, none of which are more favourable, I have no hesitation in saying to the practitioner that, unless he can find a patient who, on the first indication of cancer of the cervix or fundus, the latter a condition rarely diagnosed, is bold enough to run the terrible immediate risks involved by removal of the whole uterus, and to shut her eyes to the almost certain return of the disease, he had better leave the operation out of his calculations. No general practitioner will think of performing it himself; and if he wishes to know the relative disadvantages of vaginal or abdominal removal, and the mode of avoiding fatal results by hemorrhage or otherwise, in either case, he will find abundant references in the works of Thomas, of Hart and Barbour, and of Schröder, referred to above.

Extirpation of the whole uterus for malignant disease may become a somewhat safer procedure in the future, when its indications and mode of performance have been simplified and made more clear, and when we have found some more certain specific against the return of the disease. For the present it had better be left in the hands of those who may be successful pioneers, but who are not for the time being desirable medical advisers. With so distinguished an authority on surgical gynecology as Emmet, I might well say that "we will not enter into the merits of

this operation for the removal of cancer of the uterus, or more than question if any permanent advantage, on this condition, can possibly be found."

Since the foregoing lines were written, I have, through the courtesy of Dr Jackson of Chicago, received a full copy of his paper above referred to, and I cannot resist making two very apposite quotations from it. "What are the facts? As we must all admit that, so far, no remedy has been discovered which has power to remove a hypothetical blood poison, so it is notorious that in almost all instances in which surgical operations have been done for the removal of this disease—whether by knife, scissors, cautery, or caustic—they have only been of temporary benefit, if beneficial at all. Nevertheless, so long as these procedures were comparatively free from danger to life, so long as they could not be fairly charged with doing actual harm, they were doubtless proper in many cases, because they added, for a time at least, to the patient's comfort. It can hardly be claimed or admitted that operations for cancer in every part of the body have usually done more than this, the instances in which the disease has been permanently cured, or in which life has been lengthened by them, being quite exceptional. But when the operations themselves become so dangerous as to destroy 70 per cent. of lives in a few hours or a few days; and when, of the few who escape the operator, 50 to 78 per cent. die from return, or rather continuance, of the disease within a few months; and when, further, of those who yet remain, all, or nearly all, die as soon as though no operation had been performed, we may very properly cry a halt, and stop to consider whether our calling, thus exercised, is beneficial or injurious." Again—"Notwithstanding the very unfavourable results of excision of the cancerous uterus, can we expect that the operation will be abandoned? I think not. Schröder is reported to have said that if the disease should return, in five cases out of six he would still operate. Does any one suppose that an additional one-sixth would alter his determination? Many other surgeons look upon the operation with favour, and they will doubtless perform it when opportunity offers. Operations that are likely to kill are spoken of as 'brilliant,' and the popular clinics are those at which the largest number are done for removal of kidneys, spleen, uteri, and portions of livers, stomachs, and intestines. Spectators admire and applaud, they are rarely permitted to witness the quickly-following death." I agree with his final summary.

"1. Diagnosis of uterine cancer cannot be made sufficiently early to ensure its complete removal by extirpation of the uterus.

"2. When the diagnosis can be established, there is no reasonable hope for a radical cure, and other methods of treatment, far less

dangerous than excision of the entire organ, are equally effectual in ameliorating suffering, retarding the progress of the disease, and prolonging life.

"3. Extirpation of the cancerous uterus is a highly dangerous operation, and neither lessens suffering—except in those whom it kills—nor gives reasonable promise of permanent cure in those who recover. Hence it fails in all the essentials of a beneficial operative proceeding, and should not be adopted in modern surgery."

The elaborate and exhaustive discussion on the subject of extirpation of the uterus for cancer, by the British Obstetrical Society, is just concluded as I go to press. It seems in every way to corroborate the views I have maintained. Without referring to the opinions of individual speakers, I agree with the words in which the *Lancet* (March 14, 1885) concludes its notice of the debate:—"No evidence is as yet forthcoming that total extirpation of the uterus for cancer of the body either prolongs life or relieves suffering, while, on the other hand, the mortality after the operation is known to be large, and early recurrence extremely frequent. The facts known unequivocally condemn total extirpation for cancer of the cervix, and are decidedly unfavourable to its practice for cancer of the body of the uterus."

CHAPTER XV.

DISEASES OF THE OVARIES.—Prolapse. Neuralgia. Inflammation, Acute and Chronic. Peri-ovariitis. Abscess. Apoplexy. Ovarian Tumours, Solid and Cystic.

I HAVE already referred (p. 135) to the congenital abnormalities of the ovary, and under the heading of Infantile Uterus (p. 194) I have referred to certain clinical results of their imperfect development.

Prolapse of the Ovary.

This has also been referred to (p. 8). If carefully sought for by bi-manual examination, the ovary, more often the left one, may not infrequently be found to lie in Douglas's pouch, considerably lower than is normal.

Symptoms. In some instances this prolapse gives rise to no symptoms whatever, but in others it may occasion pain in defecation, or on connection, and now and again this state gives rise to a considerable amount of sympathetic nervous disturbance. All the symptoms are, however, very apt to vary at different periods. Once prolapsed, the organ is constantly liable to hyperæmia, and to temporary or permanent enlargement. Most frequently this state of matters leads also to menorrhagia and dysmenorrhœa. In women who have not yet borne children, there is no necessary connection with displacements of the uterus, but in those who have, this organ is most frequently sub-involuted and retroflexed. There is always a dull sickening pain when the prolapsed ovary is pressed, and this, with careful re-examination, after the bowels have been unloaded, will serve for its diagnosis from a fecal nodule. I have, however, known such a nodule obstinately remain after several injections. The *cause* of displacement may be congenital or accidental, and although it is met with in the unmarried, no doubt most of the cases are due to incomplete recovery from the puerperal period.

The *treatment* of this affection will depend on whether the ovary is adherent or not. In all cases, rest, copious hot vaginal injections, and free but mild purgations may be tried first. If there is no adhesion,

the organ may be replaced bi-manually, and in this way the difficulty is sometimes finally got rid of. Or the patient may be made to assume the knee-breast position in bed several times a day, her clothes being loosened, and air admitted to the vulva by elevation of the perineum. The result will be the same as in the use of the duck-bill speculum, and the prolapsed organ will roll *downwards* towards the abdominal wall, and out of the pelvis. Goodell speaks very highly of this practice. The use of a small Gariel's air pessary for short periods will tend to render the replacement permanent. In cases of adhesion, the methods used for reducing hyperemia, together with attention to the bowels, will sometimes put an end to all symptoms, the prolapse remaining; but in cases of great suffering, where this does not suffice, removal of the organ may become our only resource. Displacement of the ovary towards and through the inguinal ring, in the form of inguinal or labial hernia, has already been referred to (p. 54).

Neuralgia of the Ovary.

This is a condition so often diagnosed in ordinary practice, and the so-called "irritable" ovary is so frequent a subject for treatment, that it cannot be entirely overlooked in our list of ovarian affections. In most cases of female disease there is some undue pain on pressure over one or both ovaries. In many this pain is almost constant, even without pressure. In others it is remittent, and has all the shooting and shifting characters of a true neuralgia. In some it is evidently the *fons et origo* of dysmenorrhœal suffering, and in not a few, all the nervous symptoms from which the patient may suffer seem pretty clearly traceable to it, as to a reflex origin. I have no doubt that it is our deficient means of investigation which compel us so often to fall back on this one ill-defined condition for diagnosis and treatment. Removal of the ovaries has shown us that in many of these cases there is actual degeneration of the tissues of the organ—slight cystic degeneration or chronic fibroid contraction. In others there is doubtless hyperemia and chronic congestion of the organ. In some we have general pelvic disease, which shows itself most prominently in the most tender of the pelvic contents.

No case of neuralgic or irritable ovary should therefore be finally diagnosed and treated as such, until every effort has been made to detect something further back in the chain of causation of pain. But there will remain a residuum of cases in which nothing but ovarian pain can be detected. In these we must use the general treatment which we would employ in any other form of neuralgia. We must avoid all

the causes of pelvic congestion which are avoidable. We must beware of opium. General, certainly not local, *massage* often acts as a charm in such cases, and when we are fairly satisfied that health is breaking down, nerves are becoming a source of torment, and the mental condition is deteriorating, while no other cause can be diagnosed than the wearing ovarian pain, and none of the lines of treatment now indicated seem to avail, we are, I think, justified in entertaining the question of removal of the organs. Experience shows that this will often reveal an organically diseased condition when it could otherwise only be suspected. I cannot, however, admit even the occasional necessity for this operation, under these circumstances, without strongly insisting that every effort should previously have been made to obtain the advice of the most competent authority as to the local condition of the parts affected, and without also reminding the reader that this is a very different procedure from that of removing the ovaries on account of neurotic conditions, which are only doubtfully traceable to ovarian causation.

Inflammation of the Ovary.

1. **Acute Inflammation.**—As has been stated above, many cases of so-called ovarian neuralgia, especially those which are associated with menorrhagia, are doubtless due to congestion or hyperæmia. Such cases are often met with in the young and growing school-girl, whose education is being conducted on masculine principles, or in the newly married. These cases may insensibly merge into inflammation, although it is impossible to say how often this occurs. The removal of the causation, as far as possible, is the surest method of preventing this untoward result, and I can confirm Tart's strongly expressed opinion that a great diminution of suffering is to be obtained from the use of ergot in continuous and moderate doses, along with the administration of bromide of potassium during the inter-menstrual period.

Causation.—Under the heading of causation of acute ovaritis we must admit this chronic or intermitting hyperæmia as having a predisposing influence, along with other uterine or pelvic affections which tend to hyperæmia of the pelvic organs. The exciting causes are mainly—(1) septic or contiguous inflammation after confinement; (2) the extension of gonorrhœa or gleet; (3) certain dyscrasial diseases, especially the exanthemata and rheumatism; (4) sudden suppression of menstruation; and (5) local injury, which may act either directly or by septic extension. Almost everything, in fact, which may cause pelvic cellulitis or pelvic peritonitis (*q.v.*) may also cause ovaritis. The great difficulty in determining the real causation lies in the fact that ovaritis and pelvic

inflammation are so almost universally combined that their differentiation, or even the fact of their association, is often most difficult to ascertain. We know not when a pelvic inflammation leads to affection of the ovary, or when the reverse is the case.

(1) Numerous *post-mortem* examinations prove the fact that the septic effects of Metria or Puerperal Fever often include destructive inflammation of the ovary, and all analogy would tend to confirm the belief that they would sometimes excite that form of inflammation which ends in chronic impairment of the organ as a physiological instrument, by fibrous deposit and contraction.

(2) Gonorrhœa and gleet, acting by the extension of their virus, are so fully recognised elsewhere as excitants of inflammation in the uterus, Fallopian tubes, and peritoneum, that no wonder need be felt that the ovary often partakes in the baneful influence. That it alone, sometimes, though rarely, is affected, seems strange, but not more so than the many inexplicable selections and aversions which are often shown by the same or other poisons in other parts of the body.

(3) I have already referred to destruction or retarded development of the ovary, during the course of scarlatina and other zymotic diseases, in the early periods of life. Acute rheumatism (and perhaps other blood disorders) should be added to the list; indeed, this affection, occurring at an age when its symptoms are masked, through the want of definite expression on the part of the sufferer, with its results in cardiac, renal, ovarian, and nerve disease, is still in need of an expositor. At a later age, we have sometimes very distinct metastasis of these affections to the ovary. Mumps especially, among zymotic diseases, ought, according to theory, to affect the ovary as it does the testicle. I have no proof of this, however, but, on the contrary, I know of two cases where, immediately after ovariectomy, the patient contracted mumps, and where there was no effect on the general symptoms, or on the remaining ovary.

(4) The sudden suppression of menstruation, however produced, can be easily comprehended as a cause of sudden hyperæmia, and consequent inflammation of the ovary, or any predisposed pelvic viscus.

(5) Local injury, in the form of a blow, can rarely, if ever, affect the ovary alone, but all the misuses of sounds, pessaries, tents, or even injections or tamponings, may inflame it, in common with, or separately from, other pelvic organs. The same may be said of all the septic influences produced by the same means.

Symptoms. - The symptoms of acute ovaritis are, sudden and continuous agonising pain in the region of one, or rarely of both, ovaries. There is often great *anxietas*, and lying on the back is especially painful; together with this, there may or may not be dysuria and painful defecation. On examination, which will often be so painful as to require

anæsthesia, the swollen organ is distinctly to be made out, and if anæsthesia is not used, it is found to be intensely painful to touch.

Diagnosis.—The symptoms above given do not enable us with any certainty to differentiate ovaritis from inflammation of the surrounding parts, nor are the physical signs very conclusive. The unilateral pain and swelling, when well marked, are distinctive from metritis or pelvic peritonitis, but they are equally met with in pelvic cellulitis, and, apart from the fact that some measure of this generally coexists with ovaritis, the differentiation is difficult, and often impossible. If the painful swelling is clearly separate from the uterus, and especially if it is mobile, we may be fairly certain that it is mainly ovarian or Fallopian, rather than cellular, while, if it is diffused, and renders the uterus immovable, we may safely pronounce in favour of the cellular tissue as the principal element involved.

Treatment.—As long as antiphlogistic remedies remain upon our list they will be required here to their fullest extent. Light warm poultices to the hypogastrium, leeching of the perineum or inguinal regions, and full doses of opium are necessary, and will give great relief. Afterwards, blistering of the inguinal regions, by strong iodine liniment or otherwise, has a positive effect, explain it as we will. The rectum furnishes a useful means of treatment, by suppositories of opium and belladonna. It should be gently unloaded by warm water enemata, when ascertained, *per vaginam*, to contain fecal masses, but purgation is otherwise very undesirable, as it is in all acute pelvic or abdominal inflammations.

2. **Chronic Inflammation.**—Chronic inflammation of the ovaries is an affection much more common than the acute disease, yet, owing to various circumstances, its accurate differentiation is still more difficult. Neuralgia, or mere hyperæmia, and chronic inflammation, shade so insensibly into one another, and chronic inflammation of the surrounding tissues is so common an accompaniment, that in many instances we must regulate our treatment under a certain amount of doubt.

The symptoms are those of chronic and wearing pain in the ovarian region, aggravated for the most part at the menstrual period, and often showing, as pointed out by Priestly, a marked exacerbation midway between the periods. The left side is by far the most commonly affected, owing probably to the differences in the ovarian veins formerly mentioned, and also to the disturbing influences of the rectum and sigmoid flexure. The pain is generally increased by standing, or by locomotion, by sexual intercourse, defecation, or digital examination. It may shoot in various directions, —down the thigh, into the rectum, or elsewhere. Contraction of the lower abdominal muscles of the affected side is common, and renders palpation more difficult, while it protects the tender organ. Disordered menstruation, especially dys-

menorrhœa or menorrhagia, is seldom entirely absent. Sympathetic pains may occur in all parts of the body,—in the breast, head, or elsewhere,—and changes very similar to those of pregnancy are sometimes found in the former of these organs, while tissue changes may arise from the reflected nervous condition thus occurring. Galabin goes the length of saying that such changes are the usual cause of non traumatic cancer of the breast. Hysteria, in its manifold forms, and graver neurotic diseases, such as epilepsy, hystero-epilepsy, paraplegia, or even mental derangement, are occasionally undoubted results of the prolonged pain, malnutrition, and general irritation of chronic ovaritis, but the greatest caution is necessary in assuming their relations as cause and effect. In one instance, of which I am aware, a dose of male-fern forestalled the intended operation of removal of the ovaries. Prolapse of the ovary is often discovered in this affection, and assists materially in the diagnosis. Chronic ovarian inflammation is apt, like that of most other viscera, to be followed by a cirrhotic condition, which often leads to symptoms very similar to those afterwards described as accompanying cystic degeneration.

Causation.—Chronic inflammation may result from so many, and often from such obscure, causes, that I may simply refer the reader again to those of acute ovaritis. The normal periodic hyperæmia, when exaggerated from any cause, all morbid conditions of the uterus or pelvis which lead to frequent or constant congestion, the abuse, and, according to Duncan, the moderate use of alcohol, and all undue excitement or abuse of the sexual functions, may be added to the category.

Diagnosis. The lines which this must follow are already sufficiently indicated. Careful local examination must differentiate uterine disease, which is frequently accompanied by pain in the groin. Neuralgia must be assumed where the subject is a likely one, and when distinct ovarian enlargement cannot be made out. Hyperæmia is undistinguishable, except by a continued observation of the case, and of its obedience to anti-hyperæmic remedies. The differentiation of Fallopian enlargements and congestion is as yet in its infancy. It will be referred to in Chapter XVIII. The physical signs given under acute ovaritis are equally serviceable here to differentiate pelvic inflammation. The early stages of cystic or other degenerations of the ovary are hardly distinguishable. In the absence of clear signs of abscess of the ovary (*q.v.*), it is, I think, impossible to distinguish between those forms of chronic ovaritis where there is follicular inflammation with or without purulent results, and those where there is chiefly fibroid increase as well as contraction, with or without cystic degeneration. The pathology of the whole subject is only in course of investigation, and hardly as yet possesses great clinical significance.

The *treatment* of chronic ovaritis is spoken of almost hopelessly by

most of our authorities, except by those who advocate ablation of the organs. Judging from hospital experience alone, I should be inclined entirely to agree with them; yet in those cases where the patient can and will submit to the necessary restraints or conditions, permanent success by curative measures might, I think, be frequently claimed. The key-note is to try to investigate as far as possible the neuralgia, or hyperæmia, or surrounding inflammatory accessories or features of the case, so that those means of treatment which specially bear on these conditions may be prominently insisted upon. When the neuralgic or even the nervous element seems to predominate, much may be done by the early adoption of rational employment or educational occupations. Standing, working, or studying, in greater moderation, and with due regard to periodic rest, would prevent or cure many cases in the young. The constant use of the treadle sewing-machine, harmonium, &c., should also be avoided. Tonics, bathing, change of air, and the like remedies, are often as effectual as they are imperatively required. Physiological rest of the sexual organs is as necessary in the married. When hyperæmia seems to predominate, the use of mild laxatives, of bromide of potassium, of ergot, as before mentioned, in the younger subjects, and of glycerine plugs and hot-water injections in the married, produce beneficial results almost as marked as in uterine disease. The remedies somewhat empirically prescribed above for neuralgia or congestive dysmenorrhea, or menorrhagia, may be again referred to. In cases where exudation in or around the ovary is suspected, or clearly diagnosable, iodide of potassium or bichloride of mercury *sometimes* works like a charm. There is no denying the fact, however, that under the most favourable conditions, many cases of chronic ovaritis defy our attempts at anything more than temporary relief, and that removal of the affected organ may be fairly taken into consideration. I have studied a good many statistics, favourable and unfavourable, together with the history of several cases of operation for chronic inflammation known to myself, and I have looked at the matter also from a theoretical point of view, with the result that the operation is, in my judgment, infinitely more dangerous than when performed for hæmorrhage from fibroid disease of the uterus,

the diagnosis being always open to uncertainty, the presence of slumbering pelvic cellulitis being always probable, and the difficulty due to extensive adhesions being always equally probable. I am satisfied also that the number of unpublished fatal cases is very great. I have only thrice felt justified in recommending the operation for this affection. In one case the patient died, almost a happy release; in the second she recovered, but is now again suffering from what I should diagnose as "chronic ovaritis," if I did not know that there is no ovary. The third has sought and obtained corroboration of the advice from three

of our most distinguished British ovariologists, but meanwhile has added another baby to the population, and has recovered from her symptoms. I do believe that a certain small number of cases are suitable for this operation, but I also believe that the very highest diagnostic skill, and extreme urgency in the symptoms, can alone justify it at the present time. Operation merely on account of the nervous affections accompanying or supposed to proceed from ovaritis, must be justified or condemned on wider grounds.

Peri-Ovaritis.

This is a term in such frequent use that I cannot avoid introducing it here. But it is merely to be regarded as an expression which conceals our ignorance of the real pathology of the case. Inflammation about the ovary may mean either an extension from its substance to its covering, or from its surroundings to itself, and it includes both the *peri-* and the *para-*, the peritoneal and the cellular elements, which are to a certain extent distinguishable in pelvic inflammations. If inflammation about the ovary can be diagnosed as separate from ovaritis, we have simply pelvic peritonitis or pelvic cellulitis to deal with, and these will be discussed in a succeeding chapter.

Abscess of the Ovary.

This affection, as distinguished from suppuration occurring in ovarian cysts, is comparatively rare, and our present powers of diagnosis again fail us, for we can seldom differentiate it from abscess of the pelvic tissues, or within the Fallopian tubes. It would be a great advantage if we could do so, for it would lead to much earlier interference, either by aspiration or by abdominal section, the wall of the suppurating ovary, or of a Fallopian abscess (pyo-salpinx), being much more apt to burst into the peritoneum, and so produce fatal peritonitis, than the thickened lymph which surrounds a pelvic abscess. Acute or chronic ovaritis may, either of them, be followed by abscess, and the occurrence of rigors, very high night temperatures, and obscure fluctuation, will point to the probability of suppuration. No doubt ovarian abscesses occasionally find their way into the rectum, vagina, or bladder, but in such cases they can rarely be distinguished from the products of pelvic inflammation. All that I can say with regard to treatment is this, that if we are convinced that abscess exists in the ovarian region, and if there has been reason to suspect ovaritis previously, no time should be lost in

pursuing active treatment. Aspiration *per vaginam* with a very fine trocar will satisfy us as to the purulent nature of the contents: and if the cavity rapidly fill again, an exploratory abdominal incision, with a view to removal or other treatment of the suppurating sac, will be justified in proportion to the extent of our confidence as to the strictly ovarian or Fallopian origin of the swelling.

Ovarian Apoplexy.

Every time an ovum is thrown off there occurs a small apoplectic effusion into the Graafian vesicle, and this may increase to such an extent as to become a pathological phenomenon. Dilatation of the cavity may occur, to the size of a small apple, and rupture may then give rise to a not very uncommon cause of pelvic hæmatocele. Or an ovary which is already subject to cystic disease may, through rupture of a cyst wall, become affected with apoplexy, independently of the menstrual hyperæmia, and this may also burst into the peritoneal cavity. Farre and other pathologists consider that some cases of persistent ovarian cysts are due in their commencement to an apoplectic discharge of the former character. Looked at from the clinical point of view, ovarian apoplexy may be encountered in one of two forms. In the first, we have, at a menstrual period, sudden and severe pain in one ovary, with a certain amount of shock and no rise in temperature. Examination may divulge a soft, fluctuating, isolated tumour in the region of the affected organ. Under these circumstances, hæmorrhage is to be strongly suspected, and every effort must be made by rest, cold applications to the abdomen or vulva, and avoidance of careless manipulation, to restrain the apoplectic flow and prevent rupture. In spite of the fact that a minute rupture does necessarily occur when the ovum is discharged, these means seem occasionally to be effective in preventing its extension, and it appears very probable that in many cases we have some form of abortive ovulation without rupture. In the event of gradual although tolerably rapid disappearance of the unilateral swelling, the diagnosis may be considered to have been confirmed. In the second clinical form rupture occurs as an early, if not the first, symptom, and we have still more collapse, symptoms of loss of blood, and ultimately all the physical signs which will be described as characterising pelvic hæmatocele. If ovarian cystic degeneration has been previously ascertained, or if the event occurs during menstruation, the ovarian origin of the hæmatocele will be highly probable. It must certainly be entertained in trying to arrive at some conclusion as to causation, but the further consideration of the untoward symptoms and of their treatment can only be fitly undertaken when speaking of hæmatocele (*see Chap. XIX.*).

Ovarian Tumours.

The pathology of these growths has now for several years occupied a most important place in medical literature. Through their study much light is being thrown upon the pathology of other organs of the body, and the means of diagnosis are also being rapidly increased, with the result of still further improvements in the success of that most brilliant of modern surgical proceedings—ovariotomy. To attempt anything like a complete *résumé* of what has been done in this matter, would be entirely beyond the scope or special limitations of the work. All that I can do is to give such a description of the ordinary forms of ovarian growths as will serve to render diagnosis secure, and to decide the question and methods of operation.

The literature of the subject is immense, but the English student will find all that he requires, or references to all, in the following works: Sir T. Spencer Wells, *On Ovarian and Uterine Tumours*, Churchill, 1882; Lawson Tait, *Diseases of the Ovaries*, Cornish, 1883; Wilson Fox, "On Cystic Tumours," *Med. Chir. Trans.*, vol. xlvii. page 227; Cullingworth, "Solid Tumours, The Literature of," *Obstetrical Transactions*, vol. xxi. page 276; Elsner "On Dermoid Cysts," *Dublin Jour. of Med. Science*, vol. lxxiii. page 376, 1882; Garrigues, "Contents of Ovarian Cysts," *Am. Jour. of Obstet.*, vol. xiv. page 1 *et seq.*; Harris and Doran, *Jour. of Anat. and Phys.*, vol. xv. 1881; and *Clinical and Pathological Observations on Tumours of the Ovary, &c.*, by Alban Doran, 1884.

It is desirable, for practical reasons, to separate the tumours of the ovary into (A) the solid, and (B) the cystic forms, although this involves the abandonment, in a certain sense, of the division between malignant and non-malignant types, and leads to other pathological heresies. Atonement will, as far as possible, be made for this in the course of our observations.

(A.) SOLID OVARIAN TUMOURS.

Solid tumours of the ovary may be divided into (1) the fibroid or non-malignant; (2) solid sarcomata; and (3) solid cancerous growths.

It is noteworthy in this connection that, according to Klein and Alban Doran, the ovary contains fibrous connective tissue, non-striped muscle, spindle-shaped cells which are probably rudimentary types of connective tissue, and cells of more or less epithelial character, independently of its follicles and blood-vessels. Hence these are all the elements required for the development of fibroma, myoma, sarcoma, and cancer.

Tubercle, enchondroma, and some other more rare affections are not of sufficient clinical importance to require notice here.

1. Fibroid Tumours.—The very existence of such a thing as a non-malignant solid fibroid of the ovary is denied by many, and undoubtedly it is rare. But that a slow-growing solid mass (fig. 181), undistinguishable by the eye from a fibro-myoma, or fibroid of the uterus, may occupy the place of one or of both ovaries, and that it may be removed without recurrence, is an established fact. I have now thrice removed such tumours myself, and Cullingworth (*loc. cit.*) has fully placed the fact on record by reference to a somewhat extensive literature. It is true that histologists are somewhat in doubt as to the true nature of some of those tumours which have been submitted to them. They recognise a large basis of true fibro-myomatous tissue, but they are apt to find aberrations from this type presenting round or spindle-shaped cells of sarcoma, especially the latter, which bring the tumours within the

range of the malignant type. On the other hand, two tumours which I presented to the Manchester Medical Society in 1879, which were as hard, firm, and glistening white as any uterine fibroid, but which, in deference to the general opinion of ovarian pathologists, and from the fact that they were accompanied by much and frequently recurring ascitic fluid, I termed sarcomata, were shown by my colleague, Dr Dreschfield, to contain only the normal fibro-myomatous tissue, and the patient from whom they were removed is



FIG. 181 Myoma of the Ovary (Doran).

now alive and well. I have already expressed my opinion that the evolution of sarcoma from normal fibroid tissue requires further investigation, but I have no hesitation in saying that a smooth, solid growth may arise in the ovary, may slowly increase, as a uterine fibroid increases, even to a considerable size, may give rise to ascitic accumulation, as a uterine fibroid occasionally though rarely does, and may be removed with a fairly confident expectation that there will be no return. These masses present somewhat of the contour of the normal organ, and they have generally a very distinct pedicle. Three large tumours of the kind which I have removed from two patients had each of them pedicles not larger than the little finger. It is noted by Doran that the ovarian ligament is often much thickened in cases of fibroid of the uterus, as well as in similar disease of the ovary.

2. **Solid Sarcomata**, as already mentioned, are not very distinguishable clinically from solid fibroids. They are perhaps hardly so firm in texture, even when of the spindle-celled and most common variety, and when the round cells predominate, or still more in alveolar sarcoma, they are certainly softer. It is the after-history, the occurrence of secondary deposits and marasmus, which would chiefly differentiate them, but the doubtful nature of their malignancy before removal, and the freedom from return which so often follows the removal of apparently true sarcomata, forbids us absolutely to decide their nature in this way, by a waiting process.

3. **Solid Cancerous Tumours.**—Cancer of the ovary also, may occur as a solid mass covered with the same smooth wall as fibro-myoma or sarcoma. The almost constant coexistence of ascites cannot alone be taken as a distinguishing feature of such growths; but the very rapid growth of the mass, the greater accompanying pain, the cancerous history, or the marked cachexia (when present), and the tendency to become speedily fixed to the surrounding parts, are sufficient to place us on our guard in the matter of diagnosis and prognosis. Fowles (*Brit. Med. Jour.*, 1878) has shown that, in cases of malignant disease of the ovaries or abdominal organs, we may often detect certain characteristic cell-groups in the ascitic fluid surrounding them, but I am not aware that he has shown this phenomenon to exist in the case of a solid ovarian malignant tumour which had not begun to sprout beyond its coverings, or to become attached to surrounding parts. Although such liberated cells may wander about, bacteria fashion, in search of new fields of growth, it has yet to be shown that they can perforate the wall of a free ovarian mass. Cancer is also found, when a primary affection, as a sprouting cauliflower-like mass developing on the surface of the slightly enlarged ovary and remaining for a time unattached to the surrounding parts. Such a mass, with its inevitable ascitic accompaniment, could hardly be diagnosed from peritoneal cancer. I was once induced to make an exploratory incision in such a case, and was fortunate enough to find it free from adhesions, but the patient died on the third day from septicaemia; the pedicle showed, on *post mortem* examination, no trace of cancer, although I doubt not that ere long there would have occurred a return of the disease, as happens in the form of papillomatous disease which, as we shall see, is frequently met with in connection with cysts of the ovary.

The diagnosis of solid ovarian tumours presents considerable difficulty. The clinical points of difference between those which are practically benign and those which are malignant have been already referred to. The presence of ascites is common to each, and is in no way differentiating, although its absence is opposed to the idea of malignancy. Free

mobility of the mass is strongly in favour of its non-cancerous character, but it is more liable to be impacted within the pelvis than a uterine fibroid. This is especially the case when both ovaries are affected, as they frequently are.

But the greatest difficulty lies in differentiating a solid growth of the ovary from a uterine fibroid, and yet the diagnosis is of great importance, for while, as we have seen, the uterine fibroid is reluctantly attacked by operation, the solid ovarian tumour nearly always demands removal. Its tendency to malignancy, its almost constant accompaniment by ascites, which returns after tapping, and the comparative safety of its removal, all point to this. I give briefly, and in tabular form, the distinguishing points:—

SOLID OVARIAN TUMOUR.

1. *Site*.—This is lateral in all cases, but may be bi-lateral.

2. *Mobility*.—In the earlier stages this is perfect; later on the brim of the pelvis may fix the tumour, or, especially if malignant, it may contract adhesions.

3. *Rate of Growth*.—Comparative rapidity is the rule, slowness the exception, the infrequent fibroid cases do not invalidate this rule.

4. *Pain*.—Setting aside that which is due to pelvic incarceration, pain is the rule; absence of pain is, however, a tolerably frequent exception.

5. *Disorder of Menstruation*.—Diminution or suppression of the discharge is the rule.

6. *Leucorrhœa or Offensive Discharges*.—These are absent unless uterine disease coexists.

7. *Pressure symptoms on nerves, vessels, bladder, or rectum* may or may not be present.

8. *Ascites* is a very constant accompaniment.

9. *Physical State of the Uterus*.—The cervix is normal in form unless cervicitis coexists. The whole organ is normal in length, as ascertained by the sound. Its normal contour can generally be made out bi-manually alongside of the tumour, and it may be possible to isolate it from

UTERINE FIBROID TUMOUR.

1. *Site*.—This is often central, but may be lateral or even bi-lateral.

2. *Mobility*.—This corresponds with that of the uterus; very large fibroids may be fixed, subserous ones may be very mobile, but, when moved by abdominal palpation, they carry the uterus with them more distinctly than ovarian growths.

3. *Rate of Growth*.—Slowness is the rule, rapidity the exception.

4. *Pain*.—Fibroid growths of the uterus are for the most part painless, except from incarceration or by the pressure they may cause; there are, however, exceptions.

5. *Disorder of Menstruation*.—Menorrhagia or metrorrhagia is the rule.

6. *Leucorrhœa or Offensive Discharges*.—The former is often present, the latter occasionally, owing to retained uterine discharge.

7. *Pressure symptoms* may or may not be present.

8. *Ascites* is very rare.

9. *Physical State of the Uterus*.—The cervix may be normal in form, or, if the fibroid is interstitial or submucous, it may be shortened or abolished, forming part of the mass. This in itself would be entirely differential, but it does not occur in sub-peritoneal fibroids or those whose

the tumour, although it is often displaced laterally, backwards, or forwards.

site is in the fundus. The cavity of the whole organ is generally increased in length, and it is difficult or impossible to separate the uterus manually from the tumour. This can only be done in the case of sub-peritoneal growths with a fine pedicle and without accompanying intratumoral growths.

There is hardly a single point in the above diagnostic table which it would not be possible to criticise adversely. Yet, taken *en bloc*, these furnish our sole means of diagnosis between uterine fibroids and solid ovarian tumours. I would endeavour to give a more practical value to the whole by saying that if a smooth rounded solid tumour can be felt above and below the pelvic brim, if it is accompanied by ascites, if the cervix uteri cannot be distinctly traced into it, as a part of it, and if pain and pelvic pressure symptoms are continuous, we are justified in regarding it as a probably ovarian solid tumour, and in making an abdominal incision for its diagnosis or removal. The diagnosis and differentiation of pregnancy, normal and extra-uterine, are sufficiently dwelt on elsewhere, and any other points in connection with the diagnosis of solid ovarian tumours will be more fully introduced when considering the diagnosis of the much more common cystic forms.

Treatment.—As there is no known method of influencing these growths by medicinal means, treatment resolves itself into removal or expectancy. There are no facts on record, so far as I am aware, which demonstrate any tendency towards spontaneous cure, such as those met with in the case of uterine fibroids, unless an occasionally recorded case of partial calcification can be taken as showing such a tendency. The effect of the menopause upon them is not certainly known, but, owing to their frequently malignant character, is probably adverse rather than otherwise. On the other hand, there is abundant evidence of continuous growth, of increasing severity of symptoms, and of frequent liability to malignancy. Such being the case, removal by abdominal incision (ovariotomy) is advisable in every instance. Two circumstances alone should lead to hesitation, doubt as to the diagnosis and certainty as to malignancy and pelvic adhesion. A preliminary tapping of the accompanying ascites is perfectly justifiable, and very frequently most desirable. An examination of the ascitic fluid, and a careful re-examination of the mass in its absence, tend materially to render certain our diagnosis; but as soon as we are satisfied that the tumour is not uterine, or even when in doubt on that point, if ascites return, an abdominal incision should be recommended, for the purpose of removing any diagnostic doubt, and of excising the tumour when possible. In connection with this, I should mention a fact which I hope ere long to elucidate more fully, viz., that

the opening of the abdominal cavity, and the exposure of irremovable malignant growths within it, along with a thoroughly antiseptic washing of the peritoneum, have several times been followed, in my experience, by remarkable subsequent retardation in the growth of the malignant mass. One such case I should now like to put upon record. L. J. W., a mill-worker, was confined at Middleton, on December 9, 1883. I saw her next day on account of what was supposed to be an extra-uterine foetation. There was a tumour on the right side, resembling in many respects a full-grown foetus. No tumour had existed before impregnation. A month afterwards she was sent to me at the Manchester Royal Infirmary. The tumour had then doubled in size, and at the earnest request of her friends I made a free abdominal incision to make sure of its nature. I thus exposed, in the presence of several of my colleagues, an immense cancerous growth, the existence of which we never doubted, and with the adhesions of which I took care not to meddle. The wound was stitched. No febrile symptoms followed, and the patient went home to die. Six months afterwards I heard that she was alive and fairly well in health: and on March 10, 1885, Mr Stelfox, of Middleton, writes me: "She is attending to her household duties and in fairly good health; the tumour has lost that peculiarity of outline which caused me to suspect extra-uterine pregnancy, and now presents to the touch a firm, painless, and slightly movable mass. A second tumour, or a subdivision of the primary one, situated in the left side of the abdomen, is freely movable." This is not the ordinary course of untouched intra-peritoneal cancer, and the case is by no means unique after abdominal section, otherwise I would not have reported it here so fully. The whole subject of ovariectomy and of exploratory incision is, however, discussed further on.

(B.) CYSTIC OVARIAN TUMOURS.

Cystic affections of the ovary are infinitely more common than solid ones, as a moment's consideration of the anatomy and functions of the organ would lead us to expect. Even in very early infancy cystic enlargements are often found, most of which probably ultimately disappear, by rupture or otherwise, but in rare instances they become the site of large cystic growths, such as we find in the adult. As a rule, however, persistent cystic growths are a product of maturity. Looking at them from the clinical rather than the pathological point of view, although I trust not without due regard to the latter, the following classification seems to be desirable:—

1. Ovarian follicular degeneration.
2. Dermoid cysts of the ovary.

3. Unilocular ovarian cysts.
4. Multilocular ovarian cysts.
5. Malignant ovarian tumours of cystic character.

I do not adopt the term "adenoid" as applied to any of these growths, although it is most convenient to the pathologist, and adopted by such authorities as Sir Spencer Wells and Mr Lawson Tait. If, according to Wells, it is applicable to all tumours "composed of gland structure in variously altered conditions," or, according to Tait, it "classes them with reference to the tissue from which they originate," "without giving any theoretical explanation of their formation," it is so vague a term, and so inclusive, as to be altogether useless. In fact, the latter writer says:—"All non-cancerous tumours of the ovary are, therefore, adenoid;" and again, "cancerous growths, on the other hand, introduce tissue which is either not found in the gland normally, or they produce it in a form which is immature" (*loc. cit.*, p. 137). This almost admits that, like the rest, they may originate in, or be composed of, immature gland tissue.

1. Follicular Ovarian Degeneration.—Under this title I wish to indicate a type of ovarian disease to which attention has been much turned during the last few years. Strictly speaking, the word "tumour" is not applicable to it, for the ovaries may be no larger or even less than normal, although completely destroyed by cystic disease; in other cases there is considerable enlargement. De Sinéty and other foreign writers speak of cystic ovaries, in opposition to the term cysts of the ovary. The ovary is perfectly recognisable as an organ, although its normal tissue is almost entirely replaced by numerous small hypertrophied glands or follicles, or by a smaller number of larger size. It may be a pathological error to classify these cystic degenerations separately, as they no doubt sometimes shade off into those larger growths which almost destroy the ovarian identity, and which are included in our other classes. But, clinically, they form a distinct group. Although not as a rule giving rise to large tumours, with all the consequent signs and symptoms thereof, they seem to play a very important rôle in the production of other phenomena of disease. It is now, I believe, generally admitted that a very large proportion of the ovaries which have been removed, not as tumours, but for relief of the hæmorrhage from uterine fibroid tumours, have been affected in this way. This latter fact justifies us in placing them in a separate category; for every ovariologist knows that, in spite of this frequent connection with fibroid tumours, it is the rarest thing possible to find a real ovarian tumour combined with a large uterine fibroid,—certainly much more rare than it would be if these "cystic ovaries" were merely the child-parents of ovarian cystomata. Moreover, in cases of severe and incurable menorrhagia, quite inde-

pendent of fibroid uterine tumour, when the ovaries have been removed as a last resource, this cystic condition is found to exist as almost certainly the cause of the symptom. Now, in the early stages of true ovarian tumours, we do not meet with menorrhagia or metrorrhagia as a symptom,—another strong reason for classifying these abnormal degenerations in a category by themselves. Although Fox, Rokitanaky, Ritchie, Duncan, De Smet, and many other observers have described these morbid structures, Tait has chiefly insisted on their practical bearings (*op. cit.*, p. 113 *et seq.*). Considering how strongly he maintains their effect in producing menorrhagia, I should like much to know whether he does not consider that this has a tendency to modify his views upon the subject of ovarian stimulation in ordinary menstruation. It may, therefore, be considered that this is a type of cystic disease of the ovary which tends, not so much to produce enlargement as to destroy or pervert the function of the ovary, and to absorb by pressure its remaining tissue. This form of disease should be borne in mind in every obstinate case of menorrhagia, in every supposed neuralgia, or hyperæmia, or chronic inflammation of the ovary, and must weigh with us in deciding the important question of removal in such cases. These growths are very liable to contract adhesions, and there is reason to think that their follicles often rupture, producing slight attacks of pelvic hæmatocoele or inflammation.

As regards the question of *diagnosis*, I fear we have no other test than is to be found in the existence of some enlargement, combined with the presence of some of the hæmorrhagic or dysmenorrhœal conditions just alluded to, and that we can only check the hypothesis thus arrived at by patient attempts at cure. The next decade will probably bring about something of a more certain and satisfactory character on these points.

The *treatment* of follicular ovarian degeneration can hardly as yet be considered, then, *per se*. It must rather be said to constitute an element in deciding the question, Shall we remove the ovaries for the purpose of curing certain affections which it so frequently accompanies, and of which it may be the efficient cause?

2. Dermoid Cysts.—These are growths, always of a cystic character, most commonly of ovarian origin, although occasionally found in every part of the body, and so peculiarly distinguished, physiologically, pathologically, and clinically, that no one can dispute their claim to a separate classification. A very good sketch of the history and literature of the subject will be found in a paper by Elsner (*loc. cit.*). Their distinguishing feature is that they are found to contain hair, teeth, and other dermoid structures—whence their name. But true bony tissues, brain matter, muscular fibre, and other structures have also, though more rarely, been discovered.

Causation.—Various theories have been broached with a view to explaining the occurrence of these unique growths, theories which I cannot pretend here to discuss at any length.

This much is certain, that they have nothing to do with impregnation of the patient who bears them: they are in no way allied to extra-uterine foetation. Their invariably congenital origin is sufficient to prove this. The possibility of their being the rudimentary structures of an ovum within an ovum may be admitted, although many circumstances render this very improbable. The same may be said of their origin in the abortive attempts of an unimpregnated ovum to produce some of the structures which would normally arise after impregnation. If they occurred only in the ovaries, this theory would be most tenable, and it would be supported by analogies met with in comparative anatomy. Duran throws out the hint, that possibly the unimpregnated ovum may develop as far as the undivided blastema, which would explain the *pell mell* condition of its elements, as opposed to their disposition in regular order, in the impregnated one.

Parthenogenesis, or that condition met with in certain lower animals, where one impregnation is succeeded by two or more consecutive generations of independent life, has also been brought to bear on the explanation of the phenomena—unsuccessfully, I think.

On the whole, the theory most in accordance with all the facts is that which supposes that in a variety of ways, and in very varying circumstances, the epiblast becomes included in abnormal situations, and there develops more or less perfectly its characteristic tissues. To discuss the subject more fully would entail many minute embryological details.

Symptoms.—Be the causation what it may, a tumour is not unfrequently met with of cystic form, sometimes multilocular, more often unilocular, with moderately thick walls, and true dermoid lining of epithelial type. True hair follicles are also present, and even sweat glands, and plenty of sebaceous follicles. The contents of these cysts are mainly sebaceous and fatty. At the normal heat of the body this usually remains fluid, but if tapped, the fluid freezes as it emerges from the cannula, and deposits itself in little worm-like heaps, which are absolutely characteristic and diagnostic. The cannula is easily choked, not only by this coagulation, but by the numerous hairs which are found in the tumour. These, light-coloured for the most part, although I have seen them quite black, are either scattered through the mass or rolled into inextricable balls. Teeth, often wanting in enamel, or otherwise rudimentary, are often found also (fig. 182). Paget found 300 of them in one tumour, a very possible number if the last-named theory of causation be true, but too many for an included foetus. The dermoid cyst is not always solitary. Double or even multiple ones have been found. The com-

bination of a dermoid cyst with an ordinary multilocular one, I have met with, the dermoid sub-cyst being discovered by accident. The dermoid mass probably existed before the polycystic growth, but I can hardly believe, with Fleisch, that a multilocular cyst can have developed a dermoid one in its walls. It is not unworthy of remark, also, that malignant disease may occasionally develop within the boundaries of a dermoid cyst, or be developed, according to Thornton, in the pelvis, after its removal. There is plenty of rudimentary connective tissue in these tumours to account for the development of sarcoma. Free dermoid cysts vary in size from a small apple, or less, to the size of a foot ball. While existing as mere congenital monstrosities,

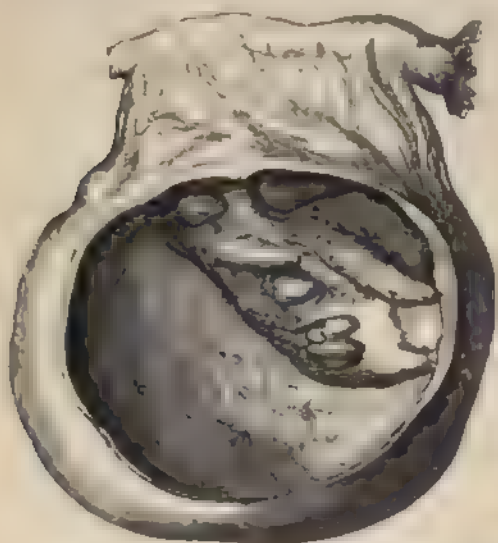


FIG. 182.—Dermoid Cyst of the Ovary (Dorau).

ties, they may remain dormant and escape notice during a long life. In this condition they are virtually a part of the body, and as such do not excite any untoward symptoms—pain, ascites, or the like. But something occurs, it may be a blow, the establishment of menstruation, marriage, pregnancy and delivery, or one knows not what, that changes the inert physiological redundancy into an irritated cystic growth. Then one of two things follows. Either rapid

increase takes place, with little change otherwise in the nature of the tumour, and we are called on to diagnose what is supposed to be a new formation; or suppuration occurs, adhesions follow, and we find that, through the bladder, or rectum, or abdominal wall, hairs, teeth, or sebaceous matter are beginning to be discharged. In the latter case the diagnosis will present but little difficulty. The extruded hairs, sebaceous and fatty matter, perhaps cholesteroline, and occasionally teeth, are quite characteristic. Nothing but the extrusion of a well-developed extra-uterine foetus could in any way give rise to error. But such a case would have a clear and distinct history of its own—a history of pregnancy and missed labour, accompanied by the normal increase of the foetus and followed by inflammatory suppuration. Besides, although portions of true bone are

met with in dermoid cysts, we never have the small limb bones which are so characteristic of a decomposed foetus in process of expulsion.

Treatment.—The question will at once have to be solved, whether it is preferable to assist expulsion by the newly-formed outlets or to cut down into the abdomen and remove the tumour. Each case will have to be decided on its own merits. If there were reason to believe that very extensive adhesion of the tumours had taken place, and if free discharge were occurring, by vagina, or rectum, or abdominal wall, it would probably be the safest plan to aid nature's efforts by carefully dilating the opening, by the constant use of antiseptic injections, and by gently extracting such portions as seemed to require assistance. On the other hand, if the tumour can be pretty clearly defined, if it is movable, or if the opening has occurred into the bladder or uterus, it would be the wiser plan to proceed to ovariectomy, using such means as suggested themselves at the time to close the opening into the affected viscus by carefully uniting its peritoneal edges.

Should we merely be called on to diagnose a tumour of uncertain nature, a good deal will depend on whether it is sufficiently flaccid to allow of fluctuation being made out, and this is very frequently not the case. A round, smooth cyst, of uncertain date, with few antecedent symptoms, very loosely attached to uterus or pelvis, would excite suspicion of its dermoid nature, and would probably lead to tapping with a small trocar. This would solve the difficulty, if the characteristic fatty and sebaceous matter were found in the smallest quantity, and still more so, if a single hair escaped. If recourse was not had to tapping, the diagnosis from other ovarian cystic tumours is impossible with certainty, and our treatment would be directed on the same principles as are applicable to other forms. In the event of the tumour rolling freely about, and not giving rise to certain fluctuation, a solid ovarian mass, of non-malignant nature, or a loosely attached fibroid of the uterus would be suggested. The two simple dermoid cysts which I have removed by ovariectomy were both instances of this form. In the one, owing to doubts which I felt, I made an exploratory tapping, and thus satisfied myself as to the true diagnosis; in the other, I thought I was about to remove a solid mass which had recently become extremely painful, and which might possibly be a degenerating ovarian fibroid. In the presence of a doubtful diagnosis, a sound rule of practice is to abstain from interference as long as there are no other symptoms than the existence of the growth, but to proceed to exploratory incision if increase of growth is manifest, and if the symptoms and signs point rather to ovarian than uterine disease. It may here be noted that the mortality after the removal of dermoid cysts is less than that after ovariectomy in general. Twisting of the pedicle, afterwards to be

mentioned, occurs in these growths with considerable frequency (Ols hausen).

3. Unilocular Ovarian Cysts.—On the threshold we are here met with a difficulty. It is stated by many that unilocular cysts of the ovary do not exist, except in the dermoid form just described, or as very small infantile cysts. The truth of this as a pathological dictum cannot be determined, except by those who are still working out the difficult, and as yet obscure, pathology of the origin of ovarian cysts in general. But if we adopt the rough general idea, that the numerous Graafian vesicles of the ovary are the origin and site of cystic disease, there is everything to account for its generally multiple character, but nothing to negative the possibility of its occasionally unicystic existence. If we look upon hæmorrhagic discharges into follicle or stroma as at least an occasional origin, the same may be said. If, according to Rokitanaky's views, ovarian cysts are largely due to exudation into newly-formed connective tissue, still there is nothing to negative the possibility of unilocular rather than multilocular distention of this stroma, and if glandular conversion into cyst is caused by alteration or retention of contents, or by changes in the gland walls, still one or many cysts may be the result; and it is certain that when the tumour is polycystic at the commencement, absorption of the partition walls frequently occurs, greatly diminishing the number of cavities, if not reducing them to one single cyst. We are driven back upon clinical observation, and we certainly find cases in which, to all intents and purposes, a large ovarian tumour consists of one cyst. Probably there may always be other small cysts discoverable by minute investigation potential successors or future accompaniments of the one which constitutes the *de facto* tumour. The tumour, however, is there, and by its symptoms demands diagnosis and treatment rather than pathological discussion. If no multiplicity of cysts, no solid or apparently solid portions, can be made out, our diagnosis is aided in certain directions, we are removed from the ever-present difficulty of mistaking a uterine fibro-cyst for an ovarian cystoma. On the other hand, we are more likely to mistake an ovarian tumour for a simple cyst growing from neighbouring parts, and so to adopt the more simple means of treatment which are often effective in their case.

Having said this much, I think we are justified in merely making a clinical suggestion with regard to these really or apparently unilocular tumours, and then referring the consideration of them to a future page. The practical observation I would make is this:—Wherever our investigations lead us to suppose that we may have only one cyst rising from the pelvis, there is a possibility that it may not be ovarian, but one of the numerous other cystic growths or developments which will after wards be mentioned, and accordingly a preliminary tapping is advisable.

I have myself seen parovarian cysts cured in this way, obscure ascitic accumulations diagnosed, renal cysts made out, which would otherwise have been impossible, and even true ovarian cysts so much relieved for several years as to justify the operation in the eyes of the patient, if not of an enthusiastic ovariectomist. The nature of the cyst contents, and, even still more important, the mode of its refilling, are important factors in diagnosis thus ascertained.

4. Multilocular Ovarian Cysts.—Undoubtedly the most common form assumed by tumours of the ovary is that of the multilocular cystoma (fig. 183). It is very difficult to estimate their frequency. As a hospital physician or a consultant, I should look upon them as exceedingly common, while it is a fact that, during some fifteen years of extensive personal practice, I never met with a case among my own patients. Even now, five out of six cases I meet with come from a much wider area than that of Manchester. By a multilocular cystic tumour we mean one which is divided by septa into many, often into thousands of separate cysts, a few of which may largely predominate over the others, and every one of which may contain fluid contents varying in viscosity, colour, and otherwise. Liquid glue, thin isinglass solution, watery fluid, coffee, pus, mucus, blood—these and many other terms might be used to



FIG. 183.—Multilocular Cystoma of the Ovary (Churchill et Leclercq).

describe the physical appearance of the contents of cysts which may be all met with in one tumour. The origin and nature of these tumours is a matter which still awaits more complete investigation, our knowledge of it, in spite of the earnest studies of many of the foremost pathologists of the day, being still most unsatisfactory. That they are not all pathologically the same, either in their origin or in their subsequent mode of growth, appears to be certain. The division into those which are due to the separate development of ovarian follicles, coalescing into one mass and covered by one wall, and those which increase, and increase rapidly, by the proliferation of cysts within parent cysts, has much to recommend it. But late observers have thrown much doubt upon this distinction. I am bound to confess that I am unable to speak with any assurance on the point, and I must refer my readers to the writings quoted above, especially to those of Alban Doran and Wilson Fox. *Non omnia possumus omnes*, and it is wiser in this case, as it would be in many others, for

clinical writers who have not the time to conduct histological investigations for themselves, not to swear too dogmatically in the words of any authority. That the Graafian vesicles play an important part, whether by simple distention, by distention and coalescence, by degeneration of those which have never fully developed, or by degeneration of their contents, as in the case of the corpus luteum, is undoubted. Other possible sources of origin were suggested when speaking of unilocular cysts (p. 400). The general remarks on the diagnosis and treatment of ovarian tumours which will occupy the next chapter will mainly concern these multilocular cysts, and will be understood as referring to them when not otherwise stated.

5. **Malignant Ovarian Tumours of Cystic character**—The existence of solid sarcoma or carcinoma of the ovary has already been referred to, but many of the cystic forms of tumour are equally malignant, either

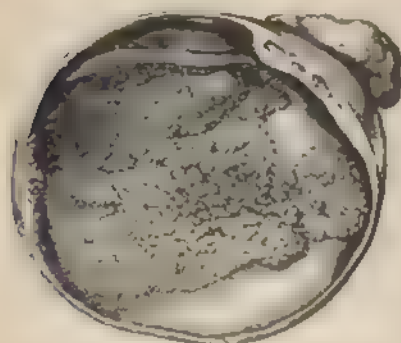


FIG. 184. Incipient Papillomatous Cyst of the Hilum. The free portion of the Ovary projects above, posteriorly (Doran).

from their commencement or in their subsequent developments. The presence of colloid matter in the cysts of an ovarian tumour has been considered by many as *per se* evidence of their malignant character. Its resemblance to the colloid matter of cancers of the breast, stomach, omentum, &c., renders this at least probable. Yet the large number of ovarian tumours which contain this substance, and which show no sign of return after removal, is rather opposed to this view. It is in the

greatly proliferating examples where this substance is usually encountered, and, as we shall see, it is these which chiefly tend to assume malignancy. Colloid contents should, I think, be regarded, not as proof of malignancy, but as bearing strongly, although by no means positively, in that direction. It is to the excessive tendency to multilocular, and especially to intralocular sprouting, that we must look as exhibiting most clearly the cancerous tendency. In certain cases we find that the interior of some cysts, if not of all, is filled with fine racemose fungous papillomata (fig. 184), the tendency of which is, sooner or later, to perforate the walls and to invade the surrounding parts with true cancerous infiltration, especially towards the lower and posterior part, the hilum, of the tumour. It has been my misfortune, and must have been that of others, to operate on tumours which presented all the appearance of ordinary multilocular cysts at their upper part, but which were

found to be inextricably incorporated with the pelvic peritoneum by sprouting masses of true cancerous tissue below. It is in this form of tumour also that malignant disease is too often found to spring up in the pedicle or in other organs, soon after successful removal. I have above owned myself to be sceptical as to the causation of this by cancer cells which have escaped through an apparently unbroken wall. Another way in which malignant disease arises in apparently benign multilocular tumours is by the thickening of their walls and septa, and the rapid development therein of the round and spindle-shaped cells of sarcoma. A true cysto-sarcoma is thus produced, which is almost as malignant in its progress and results as a cancerous proliferating growth. It will be seen that I have largely assumed the possible evolution of cancer and sarcoma from presumably non-malignant structures, and I know of no instances in pathology where this interrelation of malignant and non-malignant growths is more discernible, in the present stage of our knowledge, than in tumours of the ovary. There seems to be no bridge between fibromata and solid sarcomata, nor between common multilocular growths which are removable with certain success, and the fungating cystic cancer which has fixed its deadly hold upon the surrounding tissues.

After this brief sketch of the various forms of ovarian tumours, we will, in the succeeding chapter, treat of them more in common, and proceed to mention the essential points in their clinical characters, behaviour, symptoms, diagnosis, and treatment.

CHAPTER XVI.

DISEASES OF THE OVARY—*continued*. Ovarian Tumours. Their Size, Covering, Consistency, Vascular and Nervous Supply, Pedicle, Contents, Progress, Accidents, and Complications. Their Symptomatology and Physical Signs. Their Diagnosis and Differentiation.

BEFORE proceeding to the symptomatology, diagnosis, and treatment of ovarian tumours, there are several other points in connection with their physical characters, progress, accidental accompaniments, and the like which demand notice. I have not considered it necessary to pursue any very strict sequence in describing these, but they are all of importance to the student who wishes to obtain a proper estimate of the facts which enter into the calculations of those who undertake an operation for their removal, and who desires to have a clear idea of its difficulties and its prognosis.

1. *Size*.—The size of an ovarian tumour is an unknown quantity. Mere cystic degeneration may add somewhat to the normal size of the ovary, or may be accompanied by contraction of the organ. Solid tumours grow more or less rapidly; the more truly sarcomatous or cancerous, the more rapid the growth. If left alone, such growths may attain the dimensions of an adult head, or more. Dermoid cysts, if not suppurating, seldom attain a size larger than a football, and are usually smaller. Cystic or malignant-cystic growths are perfectly unlimited in their power of expansion, sometimes weighing, with thin contents, as much as 30, 50, or even 150 lbs. The unilocular or paucilocular examples furnish the most extreme instances of size, simply because they have less tendency to develop cell proliferation in other directions, and they are thus less frequently cut short in their growth by the death of the patient.

2. *Covering*. The outer wall of an ovarian tumour, unless there are adhesions, is smooth and glistening, and is covered by a layer of ill-developed columnar or cuboid epithelium, although, when the tumour becomes large, this becomes endothelial in character, and is apt to be so in all cases on the portion adjoining the pedicle; below this are layers of connective tissue, mingled with a certain amount of muscular fibre, also in greater quantity towards the pedicle, or rather towards the ovarian ligament. On opening the abdomen, we have at once a pretty clear indication as to

whether our diagnosis has been correct. Solid tumours, when thus exposed, vary much in appearance; but the usual cystic tumour has a clear, bluish, pearl-like aspect, which is very characteristic. It differs entirely from the dull, bluish aspect of the unopened peritoneum, from the livid appearance of a uterine fibrocyst, and from the somewhat drab aspect of the gravid uterus. But too much assurance must not be based upon this phenomenon. I have seen a large uterine fibroid with all the characteristic appearance of an ovarian cyst, and I have also seen a very multilocular ovarian cyst as purple and congested as a uterine fibrocyst. The thickness of an ovarian cyst wall differs in every case, as also does its friability; and it is only after an operation has been commenced that this can be ascertained. In some instances, portions, or the whole of the wall of a cystoma, have a dull greenish appearance, looking almost as if it were gangrenous; this is said by Donan to arise from the presence of embryonic rather than well formed connective tissue in its substance. Dermoid cysts are much less smooth and silvery, and of a duller grey colour, often with somewhat party-coloured patches. The inner lining of large cysts is often endothelial, but in small and more complex ones we have columnar epithelium, which, as we shall see, furnishes an element in diagnosis by the aspirated contents.

3. *Consistency.*—This is ascertained by abdominal palpation, or, to a limited extent, by vaginal examination, and will depend, of course, mainly upon the presence of more or less cystic contents, and upon the comparative fluidity of these. It is advisable, however, to mention here some sources of fallacy. As is the case with all abdominal tumours, the tyro is apt to mistake the mere effect of pressure on an unstable and loose mass for fluctuation; this can be avoided by having it fixed by another pair of hands, and by applying carefully the tests for fluctuation, checked by pressing the edge of a palm on the tumour, midway between the supposed fluctuating points. If true fluctuation is not present, this prevents the resemblance to a wave of fluid. I have already said that a very tight cyst with scarcely fluid contents, such as we find in dermoid tumours, is, when not adherent, hardly distinguishable from a floating solid mass. In like manner, a large multilocular tumour, or a portion of one, consisting of innumerable small cysts, may be so hard and unyielding as to be indistinguishable from a solid mass. The carefully-ascertained existence of one or two really fluctuating points in the mass, and the history and progress of the growth, along with other signs, will generally prevent error in this respect, but such cases demand the most careful investigation of everything which can throw light upon them. It may be said at once that a very large pelvic tumour, of undoubtedly rapid growth, and without marked symptoms of uterine disease, is, although apparently solid, probably polycystic and ovarian.

4. *Vascular and Nervous Supply.* The vascular supply is derived from the pedicle of the tumour, and varies considerably. Sometimes very large arteries are found, and still larger veins, ramifying upon the walls of the tumour, and liable to injury by tapping. At other times the vascular supply is greatly diminished by the stretching of the main vessels, and by degenerations in their walls. In solid tumours the larger vessels are usually to be met with only in the pedicle, but in cystic growths they may be found anywhere. In some cases, where firm adhesions have occurred, large vessels enter through these, and they may ultimately afford the main supply; such adhesions are to be practically considered as additional pedicles, and treated by ligature or cautery. The nerve supply is often abundant, but, from a clinical point of view, is unimportant.

5. *The Pedicle.* -The pedicle of an ovarian tumour is of no mean importance, the existence of such a structure in the vast majority of cases having alone rendered ovariectomy a reasonable and successful operation. The pedicle of a solid ovarian tumour, and for the most part of a dermoid one, is usually a thin and well-stretched projection from the peritoneum, a mesovarium in the language of the anatomists, but that of the common cystic growths varies considerably. It may be broad and thin, or thick, or it may be long, and easily encircled with the finger. It consists of the whole or of a portion of the broad ligament, sometimes much thickened and elongated, at other times very thin and fragile. The Fallopian tube is generally attached to it, having the appearance of a long pink fleshy mass, and sometimes appearing very like a portion of small intestine. Its abrupt termination in the funnulated extremity differentiates it from this, however. The utero-ovarian ligament is also traceable in the pedicle, although sometimes both it and the Fallopian tube run up to the tumour with an interspace between them and the true pedicle, and I have more than once seen the ovarian pedicle tied and a large tumour removed, the Fallopian tube not entering into either. The enlarged ovarian vessels also form part of the pedicle, and it is their great size which renders the treatment of the divided pedicle so important. Occasionally the multilocular cystoma is sessile, has no definite pedicle, and this is especially apt to be the case with those which show malignant tendency in the form of papillomatous sprouts; they have pushed their way downwards between the layers of the broad ligament. In the not very common case of complete fusion of cystic growths of each ovary, the double pedicle may be the first circumstance to call attention to the fact.

6. *The Contents.* We are not concerned now with solid tumours, nor with dermoid cysts, which have been sufficiently described. In very small cysts, chiefly in those of early life, and often probably of evanescent

character, the ovum has pretty constantly been found as a constituent, but in larger growths it is sought for in vain, either because it has really disappeared, or because the mode of formation may not have involved true ovum-bearing vesicles. But fluids of various physical characters are found in all cystic growths, and some knowledge of these is necessary as a means of diagnosis. Much doubt, however, still hangs over many of the statements which have been most authoritatively made as to the distinctive chemical and microscopic appearances of these fluids. One of the most exhaustive researches into this subject is that of Garrigues (*Amer. Jour. of Obstet.*, 1882). After all his labour he is driven to the conclusion "that the examination of the fluids affords a very valuable aid to diagnosis, but that it would be rash to base a diagnosis on the character of the fluids alone."

We look to the physical characters, to the chemical nature, and to the microscopic appearances of ovarian fluids for some guidance in diagnosis, and of each of these it may be said that we may have characteristics which afford a very strong amount of probability when present, but which may not be present, or which, if present, must be considered as corroborating, but never as directly outweighing, the evidence derived from other means of examination.

(a) Of the *physical characters* thus much may be said, that a very clear or pale straw-coloured fluid, of low specific gravity, is opposed to the diagnosis of ovarian cystoma, other things being equal, but that nevertheless it is met with in unilocular or paucilocular cystic tumours, and sometimes in the individual cysts of multilocular tumours. Very distinct viscosity, especially if combined with the peculiar colorations mentioned above (p. 401), is exceedingly strong evidence in favour of an ovarian source. The more gluey and tenacious, the more certainly is the fluid ovarian. The specific gravity is liable to all sorts of variations; but the higher it is, the more probably is the fluid ovarian, and the more certainly is the tumour multilocular. Roughly, we may estimate the specific gravity of ascitic fluids as from 1010 to 1015, of the fluid of parovarian cysts as still lighter, and of that of ovarian cystomata as 1015 and upwards. Spontaneous coagulation, even slowly, is a rare phenomenon with ovarian fluids, whereas ascitic fluid generally coagulates after a time, and fluid from a uterine fibro-cyst generally does so very rapidly.

(b) Of the *chemical characters* Garrigues maintains that "no chemical product peculiar to ovarian fluids has been found." They generally coagulate with heat to a considerable extent, but the same thing applies to many other fluids which might be mistaken. The absence of this phenomenon would throw very strong doubt on the diagnosis of ovarian cyst. Much stress has been laid on the presence in ovarian fluids of pur-

albumin, a substance which, coagulating by heat and nitric acid, redissolves or becomes gelatinous when boiled with an excess of acetic acid. I have seen so many mistakes with this test, modified in various ways, that I regard it as a source of error rather than of certainty, and we know almost nothing more practically certain with regard to other modifications of albumin.

(c) The *microscopic appearances* are somewhat more important than the chemical characteristics, although the real interest is confined to one or two bodies. Red blood-corpuscles, various undefined granular matters, pus or pyoid cells, cholesteroline, oil globules, these, with other less common substances, are, one or the other, met with in the fluids of ordinary ovarian cysts, but they have nothing of a distinctive nature about

them. They may all be found in many of the other collections of fluid which are liable to be mistaken for ovarian. But on two microscopic objects great stress has been laid, as being diagnostic of ovarian cystic growths. The first of these consists of what is now pretty generally known as "*Drysdale's corpuscle*"; the second is true *columnar epithelium*.

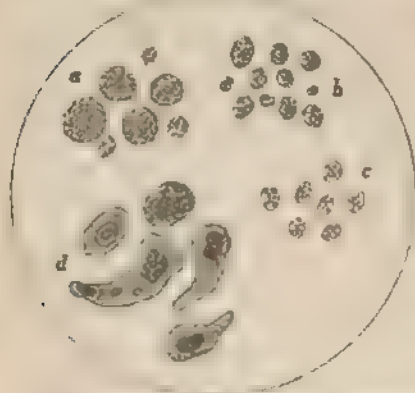


FIG 185.—Microscopic appearance of the most characteristic contents of Ovarian Cystomata. a, compound granular cells of Gluge; b, Drysdale's corpuscles; c, the same treated with acetic acid; d, columnar epithelium.

Granular bodies (fig. 185, a) have long been described as abundantly present in ovarian fluids, by Bennet and others, but no tests have been given to distinguish them from similar bodies found elsewhere. T. M.

Drysdale claims, however, to have discovered a peculiar form of cell, with special microscopic appearances and micro-chemical behaviour, only met with in ovarian tumours, or, at any rate, in no "other abdominal dropsical fluids." This granular cell (fig. 185, b) (Garrigues maintains that it is not a cell, but an epithelial nucleus in a state of fatty degeneration) is round or oval, transparent, containing many fine, clear granules, but no nucleus. It varies in size, but is commonly about that of a pus cell. Acetic acid renders the granules more distinct, the cell more transparent (fig. 185, c). Ether renders the granules nearly transparent, but does not change the cell. These tests, especially the former, seem to distinguish it from pus, white blood cells, lymph, or other cells of similar appearance. The question whether these bodies are pathognomonic

has yet to be decided. Of their frequent occurrence in ovarian fluids there can be no doubt, nor, I think, of their great rarity elsewhere, so that we must consider their discovery in any doubtful fluid as having at least great weight.

The other important structure, true columnar epithelium (fig. 185, *d*), is due to desquamation from the lining walls of the cysts, especially of the smaller ones. When fairly seen, in side view, their importance is very great, if not absolutely pathognomonic. They are found also, however, in cysts of the Fallopian tube and broad ligaments, but in no other tumours, except perhaps cysts of the pancreas. The presence of cilia on these epithelial bodies is rare; and it is as yet doubtful whether this is not confined to cysts of the parovarium or tubes, and therefore diagnostic of their origin. Some of these points must be a little further referred to when speaking of the differentiation of ovarian tumours, but the presence of columnar epithelium and of Drysdale's cells or nuclei is the most reliable datum to be obtained from an examination of the fluid contents of ovarian tumours; according to Garrigue, however, "there is no pathognomonic morphological element in ovarian fluid;" and, after weighing the evidence afforded by Fowles, Thornton, and Keith, he also says. "Neither the quantity, nor the size, nor the shape, nor the arrangement of the elements found in cystic fluids enable us to tell that the cyst is sarcomatous, or carcinomatous, but only that it is ovarian" (Garrigue's "Summary," *loc. cit.*, pp. 681, 682).

Progress of Ovarian Tumours.—The progress of a cystic degeneration cannot be estimated. There is reason to think that it may continue for many years with little change, but constantly giving rise to menstrual troubles, and occasionally to ovaritis, pelvic cellulitis, abscess, or hamatocoele, by one of which it may terminate life. Dermoid cysts remain long stationary, and perhaps free from symptoms, but, as we have seen, they may become suddenly excited to growth or suppuration. The progress of a solid tumour is influenced by its malignancy; and, as that is the rule rather than the exception, we usually find rapid development after the first discovery. Of true cystic tumours it may be said that the rapidity of growth is in proportion to their tendency to the polycystic form; but this is not without exceptions, especially as regards the reilling which takes place after tapping. Now and again, cysts, even those in tumours distinctly of multilocular character, remain almost stationary for indefinite periods, but these are very exceptional cases. It may be stated roughly, as the result of many special inquiries, that the duration of life from the first commencement averages under three years; and this is rightly to be taken as an element in determining the propriety of removal, and to be placed, with all its miserable accompaniments, after allowing for the immediate risk of life, in opposition to the prospect of future healthy existence after operation.

Accidents and Complications.—Ovarian tumours are liable to various complications, which add to the difficulty of diagnosis or of treatment. It is, of course, possible to meet with an ovarian tumour in conjunction with any other affection which might be mistaken for it, or which, from the dissimilarity of its symptoms, might lead to an error in diagnosis. Such cases call for the exercise of the highest diagnostic skill and the most careful weighing of every symptom afterwards to be described, but one or two specially frequent complications must be here mentioned.

Thus (a) the tumour may be double—that is, there may be one growing from each ovary, generally of very similar character. Solid tumours often grow thus, and cystic ones not infrequently. With regard to the latter, the diagnosis is exceedingly difficult,—often impossible: fortunately it is not very material. In a very small number of cases of double ovarian cystomata, fusion of the two tumours takes place, through atrophy of their contiguous walls, a source of difficulty and doubt to the operator, but quite unrecognisable before operation. The bilateral growth of solid tumours increases the difficulty of diagnosis from uterine fibroids, which are so often multiple.

(b) Pregnancy may coexist. This must never be left out of view as a possibility, not only at our first examination, but at any future stage of the disease. Experience shows that, in such cases, where the pressure symptoms are severe, a large cyst may safely be tapped, removal being then adjourned till after delivery; but that, in the case of rapidly growing multilocular cysts, either the induction of premature labour, or ovariectomy during pregnancy, may be called for. A careful consideration of the risks involved either way would appear to me to point to the preferability of the former operation in the majority of cases, although there is room for a different decision in certain circumstances, and the patient, if intelligent, should be allowed some share in the decision.

(c) *Adhesions.*—There is a constant tendency towards the contraction of adhesions with neighbouring structures; so much so, that these may fittingly be termed complications rather than accidents. The presence of ascites tends, in the case of solid tumours, to prevent or diminish such adhesions, but the multilocular, or even the unilocular, or paucilocular cysts are seldom exempt from some slight amount. Both from symptoms occasionally observed, and from the existence of these adhesions, it is evident that inter-current attacks of sub-acute or latent peritonitis are not infrequent, but their relation to adhesions is not definite. Fortunately, adhesions are generally slight, and to the omentum, or at the upper and anterior part of the tumour, where they are comparatively easy to deal with, but extensive and firm adhesion may occur to the intestines, vermiform appendix, bladder, uterus, pelvic lining, ureter, liver, diaphragm, or stomach. If on deep inspiration and

expiration the tumour can be seen to move freely below the abdominal wall, we have a tolerable assurance against the presence of firm or close adhesions in front or above, but the existence of deep pelvic adhesions, even those due to malignant sprouting, is difficult and often impossible to ascertain, although a careful bimanual examination may lead to surmise, by showing fixity of the uterus, or signs of pelvic infiltration.

Other complications, from their greater rarity, partake more of the nature of accidents, sometimes of the most serious character. Among them we may here mention

(a) *Impaction in the Pelvis.* This can only occur with small tumours, but may occasionally give rise to retention of urine or pressure on the rectum, and may cause the recognition of a tumour not previously suspected. The accident is much less common than with uterine fibroids, and demands the same treatment by pushing up the mass over the pelvic brim. If evidently cystic, recourse may be had to aspiration *per vaginam*, partly as a means of diagnosis, and partly in the hope of cure, and the same treatment is called for in those cases where the descent of the head is opposed in labour. I have twice thus permanently cured cysts, ovarian, or in the neighbourhood of the ovary, during the progress of labour.

(β) *Twisting of the Pedicle.*—This is a common enough accident, although not to a sufficient degree to produce any decided symptoms. Some writers, Gallen for instance, speak of this as a happy termination of ovarian cysts, leading to gradual atrophy, but the *post mortem* proofs of such a result are not numerous. More frequently the results are disastrous. In some cases the twisting appears to be comparatively sudden, and in these especially, owing to the compression of the vessels, hæmorrhage may occur into the cysts to an alarming extent, or fatal rupture with hæmatocoele, or gangrene of the whole mass may ensue. The sudden occurrence of symptoms of collapse in the subject of an ovarian tumour will always point to the accident as probable, and all authorities are now agreed as to the advisability of immediate operation under the circumstances. The pedicle, if long, may also become entangled around a knuckle of bowel, producing strangulation, and constriction of the pedicle itself has been caused by contracting bands of lymph. Either of these events, if highly probable, would equally demand immediate operation or exploration. The causes of ordinary and slow twisting of the pedicle are doubtless to be found in more than one direction. Ordinary movements of the body, acting upon a tumour which is often heavier on one side, and free to move laterally, while much compressed above and below, and the action of the loaded rectum or sigmoid flexure, are probably the more usual of these. Dermoid cysts would seem to be specially liable to the accident.

(γ) *Separation of the Tumour.* As a result of the accident just mentioned, or possibly from mere atrophy of the pedicle, the normal attachment has occasionally disappeared, and the tumour has become attached by adhesions, as by a new pedicle, to surrounding parts. Such changes being gradual, can hardly be diagnosed, but this possibility has to be borne in mind in ovariectomy, and the presence of such adhesions may modify the influence of twisted pedicle.

(δ) *Intra-cystic Hemorrhage.* Some amount of this is not very infrequent, as shown by the more or less sanguineous contents of certain cysts, but, owing to the occasionally great size of the vessels, and the distensibility of the cysts, it may be fatal. The smaller or more frequent hemorrhages may give rise to intense anemia. The accidental tapping of a large vessel may produce similar results. Sudden collapse and general symptoms of hemorrhage, with increased feeling of distention, point pretty clearly to the nature of the accident, and if the symptoms are of sufficient gravity to imperil life, and death is not too sudden, immediate operation is called for.

(ε) *Intra-cystic Inflammation.* This also occurs, sometimes spontaneously, sometimes owing to blows or injuries, and sometimes owing to careless, septic tapping. The results may be confined to the interior of the tumour, producing suppuration in one or more cysts, with hectic and severe pain, or the inflammation may spread to the external wall and peritoneum, producing intense peritonitis, or the inflamed cyst may rupture, with the same result. So long as the symptoms of inflammation are slight, and likely to be temporary, interference with the tumour is to be deprecated until their subsidence; but marked hectic showing probably extensive intra-cystic suppuration, or violent peritonitis showing one or other of the previous accidents, demands immediate operation, and this is often followed by the happiest result, and almost instantaneous subsidence of the dangerous symptoms.

(ζ) *Gangrene.* This has been referred to as an occasional result of strangulated pedicle, but it may also occur from inflammation, or from unknown causes. Its result, if unrelieved by immediate operation, is certain.

(η) *Rupture.* This may ensue, as above stated, from hemorrhagic distention or from suppuration. But, either from injury, or from distention by the usual contents, a cyst may give way into the peritoneal cavity. The same thing has not infrequently followed on tapping, owing to the slipping of the trocar. The result differs widely in different cases. Rarely too rarely—a permanent cure ensues, the peritoneum absorbing the fluid, and the cyst not refilling. I have met with two such instances of cure, one spontaneous, the other after tapping. In the latter the fluid was so thin and watery as to suggest a parovarian

cyst, the former was also apparently unilocular, and with thin contents. When the fluid is irritating, great shock may follow, to be recovered from with subsequent renewal of the growth of the tumour, or violent or fatal peritonitis may result. Even very tenacious fluids do not always seem to have this effect.

Instances are not rare also of the rupture of ovarian cysts into the vagina, rectum, bladder, uterus, or perhaps Fallopian tubes, or even on to the external surface. Spontaneous cure has also arisen in this way, but a fistulous opening, or one which reopens from time to time, is a more common result. Such spontaneous ruptures with a happy issue cannot in any way be relied on as an element in our calculations as to treatment, but, on the contrary, the possibility of fatal hemorrhage or peritonitis, or of the extension of malignant disease in this way, is an argument in favour of early operation.

(8) *Kidney Disease*.—Besides the accidents and complications just mentioned, the frequent concomitance of Bright's disease should be noted. This furnishes an element of great hesitation in operating, but albuminuria may be present, as in pregnancy, from pressure on the renal circulation, and general or local edema may coexist. No doubt, also, organic kidney disease may be due to great or long continued pressure on the ureters, but this, to one who does not too greatly concern himself on the production of favourable statistics, should furnish an argument in favour of operation rather than the reverse. The certainty of marked renal degeneration should therefore be proved by clear microscope evidence ere we are deterred from operating in an otherwise suitable case. Pleuritic and pericardial effusions likewise occur, independently of renal disease, and do not serve as absolute deterrents from operation. I have seen both rapidly disappear after it.

SYMPTOMATOLOGY OF OVARIAN TUMOURS.

Of the symptomatology of cystic degeneration enough has been said. Menstrual troubles, with or without special ovarian tenderness or swelling, constitute the main results, although, considering the frequency with which this lesion is met in the *post mortem* room, there is reason to believe that it may not infrequently exist without any striking symptoms at all. The symptoms of a latent dermoid cyst are simply those which may occur from its pressure, as in other tumours, and its physical signs are those of a cyst or a solid tumour according to the tenacity of its contents. Solid ovarian tumours give rise to few or many symptoms according to the rapidity of their growth. The pressure symptoms do not differ from those of the cystoma. Actual pain, apart from pressure, will depend largely on the existence of malignancy. There is, as has been said, a special

tendency to ascitic accumulation, wherein such solid tumours differ from uterine growths or ordinary ovarian cystomata. As regards derangements of menstruation and other general symptoms, all that need be said is included in the symptomatology of cystomata.

Cystomata, or cystic growths in their earlier stages, most frequently give rise to no symptoms or to none sufficiently urgent to lead to their detection. Hence it is that we seldom meet with them until they have arrived at the size, say of a cocoanut, or until they have risen well above the pelvic brim. If they are discovered before this it is most frequently by accident, during the examination for some supposed uterine affection, or because their partial incarceration in the pelvis, from rapid growth or inflammatory adhesion, has caused pressure on the bladder or rectum, with obstinate constipation or suppression of urine, or they are discovered as obstacles to the progress of delivery. The symptoms of pressure on the bladder, rectum, pelvic vessels, and nerves to which they may give rise, most frequently disappear or diminish to a great extent when they fairly rise above the brim, which they do the more readily, the more fluid their contents, or the less polycystic they are. Occasionally, although very rarely, great pain is felt in a small cyst, necessitating early interference.

As the tumour increases in size, the first and only symptom may be a noticeable increase in the abdomen, similar to that met with in pregnancy, although seldom observing the same rate of speed. Usually it is either much slower or much more rapid. A certain amount of menstrual change generally accompanies this. By far the most commonly the secretion becomes scanty or irregular, less frequently it is entirely suppressed, rendering the similarity to pregnancy greater; still less frequently, menorrhagia is present, but I am inclined to think that this is always due to the coexistence of other disease. In one such case the hæmorrhage was due to a small mucous polypus of the cervix, in another to an intra-uterine fibroid polypus the size of a walnut. Menorrhagia is opposed to the diagnosis of ovarian tumours, but not prohibitive. The symptoms of upwards pressure may next begin to present themselves with more or less rapidity, viz., dyspnoea, nausea and vomiting, with palpitation. The vesical and intestinal pressure may still continue or may have totally disappeared, but there is frequently œdema of the lower limbs and abdominal wall. Albuminuria is a not very infrequent accompaniment, owing to pressure on the renal circulation. Many of the ordinary general symptoms of pregnancy are often found accompanying the growth of the tumour, and these should never mislead the wary, although they impose the necessity for caution. Darkening of the areolæ and milky secretion in the breasts are not uncommon, and I once met with abundant xystine in the urine. Pain is a very

variable concomitant, with large tumours there is often none, at other times it is severe and constant, and undoubtedly this is sometimes due to the existence and stretching of adhesions or to the presence of slight attacks of peritonitis. Emaciation sooner or later sets in, increasing the strange appearance of the now perhaps enormous abdomen. Intestinal disorders, diarrhoea, gastritis, enteritis, latent pleurisy, &c., set in, and the patient gradually sinks from the wear and tear of these, from the pain, if it be present, and from the impoverishment of the system, if none of the fatal accidents mentioned above supervene.

There is a great tendency during ovarian disease to the deposit of pigment (melanitis) on the forehead, abdomen, or elsewhere, just as often occurs in pregnancy. Sir

Spencer Wells has graphically described and figured (fig. 186) a type of facial expression (*facies ovariana*) which is very characteristic of many chronic cases. He says, in a private note:—"For many years past I have tested the diagnosis between uterine and ovarian tumours by the physiognomy before examining the abdomen of a new patient. I have been right nine times out of ten. Sometimes I have guessed that both a uterine and an ovarian one were present and have been right." Let not the

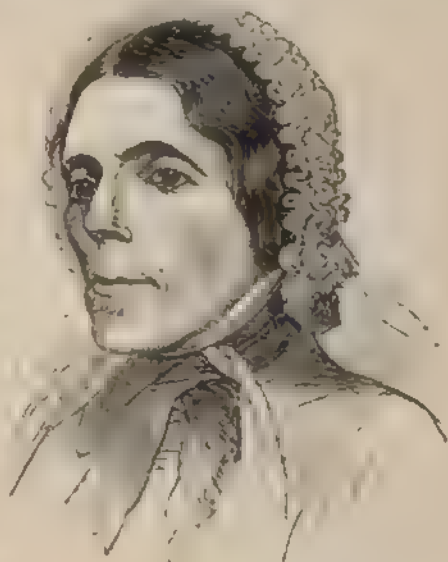


FIG. 186. — Ovarian Facies (after Wells).

young beginner, however, trust too much to this, if at all; the exceptions are numerous and sometimes striking.

The *Physical Signs* which accompany these symptoms are those which depend on the presence of a globular mass arising from the pelvis and projecting upwards into the abdomen, the globular mass being more or less soft and fluctuating within its own limits.

This does not, of course, apply to *small tumours* still within the pelvis. These are only to be detected by vaginal or rectal, and by bi-manual examination. If the student will turn to the table of abnormal contents sometimes found in Douglas's pouch (p. 7), he will see the various similar objects met with there. The characteristic marks of an ovarian

cytoma here present are a distinctly rounded substance, for the most part lateral and posterior to the uterus, but with occasional exceptions, separable from the uterus by the finger, or still better by bi-manual examination. It is elastic or even fluctuating, movable in the pelvis, and the finger in the rectum can often detect a distinct band of tissue—its pedicle. Adhesive inflammation may alter some of these signs by fixing the mass to the pelvis or to the uterus, and it may not be possible to be absolutely sure of the diagnosis except by awaiting further development or by aspirating the contents, and so setting aside the possibility of abscess or other fluid mass.

Larger growths, perceptible in the abdomen, have the following physical characters, usually so well marked that they may be taken as diagnostic. Rare and most puzzling exceptions to nearly every one of these signs are met with, but I think I should be doing more harm than good by attempting to enumerate them here. For example, I have seen a thin flaccid cyst, which, on refilling after tapping, allowed the intestines to envelop it in front, giving resonance all over anteriorly and deep dulness in the flanks, which was completely altered by change of position. Again, I have more than once seen ascitic dulness strictly confined to the middle line in all positions, when there were no adhesions to encyst it there. A short mesentery was the only available explanation. Setting aside, however, such special abnormalities as these, we find that—

(1) *The size, shape, and appearance of the abdomen are altered.*

The increase in circumference will vary in every degree, up to 50 inches or more, but the shape of the enlarged abdomen is generally characteristic of something abnormal existing at one part and not in the general cavity. The protrusion may be, often is, very decidedly lateral, but even if it is central, it is a protrusion, and it has not that broad, flattened appearance which is found in ascites. Only very large and flaccid, and almost unilocular cysts give rise to anything like this, and even they do not bulge out the flanks and allow the front of the abdomen to flatten down to the same degree. In doubtful cases measurement of the abdomen in various lateral directions will assist the eye. The appearance of the abdominal walls differs much. In some cases the veins are enormously distended, *linæ albicantes*, similar to those of pregnancy, are present, or there is great cedema. In others fat predominates and masks all else. In others, again, the walls are thin and emaciated, permitting us to see clearly the movements of the subjacent tumour during respiration. The appearance of the umbilicus is not very characteristic. I have seen it much hardened and hypertrophied, bulged out, flat, or even retracted.

2. *Palpation shows variations from the normal.*

If the tumour is only moderately large, its outline can generally be felt as something abnormal. It may feel like a tense soft ball, or it may vary in apparent hardness, appearing like a gravid uterus, or even a uterine fibroid, or it may, and most commonly does, exhibit different degree of hardness at different points. It is never contractile, as the gravid uterus frequently is, but contraction of the abdominal wall may closely simulate this. If very large, the tumour may be indistinguishable from other parts of the abdomen, but all the natural elasticity of the walls is then absent, or, in the case of a huge single cyst, the universal presence of fluid is manifest.

3. *Percussion shows manifest departures from the normal.*

When not complicated with early adhesions, the tumour rises in front of the intestines, just as the gravid uterus does, so that they are pushed laterally, upwards,

and backwards.

There is, therefore, an area of dulness on percussion, which is quite abnormal (fig. 187, B), and which occupies the front of the abdomen, from the pubes upwards to a certain level. This area, if not very great, is generally much greater to-



FIG. 187. Comparison of areas of dulness in Ovarian Cystoma and Ascites (Wells). The dark parts are dull. A, Ascites. B, Ovarian Tumour.

wards one side, and compares with the resonance deep down in the flanks or above the level of the tumour. Special, and often temporary circumstances, such as a loaded colon or stomach, a full bladder, or the coexistence of slight ascites, may often interfere in one or other direction with this sign; but subsequent examinations, with precautions against repetition of the cause of error, will prevent any permanent mistake. The consulting physician, who is often called on to decide the question of diagnosis at one interview, must make mental exceptions for such difficulties, while it is the fault of the practitioner in charge if he cannot more leisurely solve them for himself.

There are two distinguishing marks in the percussion of an ordinary ovarian tumour which should never be lost sight of.—(a) The upper limit of the dulness, whether the tumour is central or lateral, has its convexity upwards, we have a dull-sounding globe, pressing resonant

intestines upwards and laterally around its circumference (fig. 187), while (*b*) the dullness remains much the same in its relations to the abdominal surface however we turn the patient on her side, the rolling of the tumour being limited by its pedicle. These features are, of course, common to many other cysts or solid growths, but in the case of dullness due to free fluid in the peritoneum, its area will gravitate with the fluid down into the flanks or lower portion of the abdomen, the intestines will float, as a gas-containing mass, to the front, the line of dullness will have its concavity upwards, and, on turning the patient on to one side, the intra-peritoneal fluid must descend, thus leaving the upper flank, dull before, now more resonant.

4. *Fluctuation is usually present at some point*, and it is circumscribed in extent. With a large unilocular cyst, crowding the whole abdomen, such fluctuation may be felt between almost any two points; but with smaller tumours, and especially with those which are very multilocular, the fluctuation has very distinct limits. One portion of the area of dullness may fluctuate freely, while the rest is apparently solid and non-fluctuating, or the skilled touch may discover separate areas of fluctuation side by side, hardly affecting one another, or varying in the degrees of apparent fluidity or viscosity which they present. Such differential areas of fluctuation, as I may call them, are seldom if ever met with except in ovarian cystomata. But the absence of distinct fluctuation, even in a true ovarian cystoma, is sometimes caused by great thickness of the abdominal walls, by the same feature in the walls of the cyst, by the extreme viscosity of the contained fluid, and by the multiplicity of the cysts and the absence of any predominating one.

5. *Auscultation shows the absence of the auscultatory signs of pregnancy.*

Remembering, and making allowance for what we have said as to the possible coexistence of pregnancy, there is nothing to be heard in an ovarian tumour resembling the 120 to 180 beat of a fetal heart. It may convey the sounds of the aorta, but the pulse of the patient, if counted, will remove this source of fallacy. Can the sounds of the so-called uterine souffle of pregnancy be simulated by an ovarian tumour, as undoubtedly they can by a vascular or cavernous uterine fibroid? Authorities generally say no; but I have heard a most typical souffle over a portion of a multilocular ovarian tumour,—the diagnosis being proved by its removal,—the only use of the sign is, therefore, to very partially corroborate other strong evidences of pregnancy or uterine growth.

6. *Physical examination, per vaginam, per rectum, or bi-manually, shows certain positive or negative diagnostic conditions.*

The os and cervix uteri are normal, unless changed by chronic metritis. They never expand, and shade off into the tumour above, as in pregnancy

and some cases of intra-uterine fibroid. The tumour itself can sometimes be felt *per vaginam*, sometimes not, or it may be more easily reached *per rectum*. It will depend on its particular degree of cystic development, whether it appears to be soft or fluctuating, or hard and unyielding; but tumours with large cysts above are often composed of masses of small ones below, with much connective tissue, and they then appear to be solid. When the tumour is very high, it sometimes drags the uterus up with it to an abnormal degree, or it may push it up almost out of reach, above the pubes. Adhesions are much to be feared in this case. With small tumours, the uterus is almost always anterior, but afterwards, this position may be retained, or the uterus may be pushed laterally or pressed backwards, retroverted or even retroflexed below the tumour. When the tumour has got fairly above and upon it, it may be driven very low in the pelvis, or even prolapsed, along with the anterior or posterior vaginal walls. The sound shows a normal length of the organ, unless uterine complications exist. It shows also the direction of the organ, and, unless the pressure of the tumour is very great, or adhesions have formed, it shows independent mobility of the uterus—the tumour being moved or held steady from the abdomen by an assistant while the sound *in utero* is manipulated.

The concurrence of a majority of the above symptoms and physical signs points tolerably certain to an ovarian tumour, but there are many sources of fallacy, and we come now to the

DIAGNOSIS AND DIFFERENTIATION.

Considering that probably no living ovariologist, however eminent, has failed to make mistakes in the diagnosis of a disease of which, commonly, "he who runs may read" the true nature, it is not to be wondered at that the whole subject of its differentiation is necessarily incomplete even in the fullest and most elaborate monographs, such as those of Wells, Atlee, or Peaslee. How much more must this be the case in a general text-book! In the diagnosis of other gynaecological affections of a local nature we have usually to decide, and that mayhap with difficulty, between three or four, or at most half a dozen possibilities; but a glance at the table below, itself perhaps not absolutely complete, will show how many sources of error there are here. Some of these affections are common, and so closely allied to ovarian tumours that it is often impossible to be certain of their diagnosis before operation; with a few this is of comparatively little importance. Others are also common, but mistakes in diagnosis are of the utmost seriousness. Others again are very rare, or may rarely simulate ovarian disease, so that even the most experienced have

had few opportunities of practically studying their differential signs. I have endeavoured so to arrange the table that, on afterwards considering its details *seriatim*, some due proportion may be given to this relative clinical importance. The most common, and therefore the most dangerous, of these sources of error are italicised. These have given rise to the great majority of the mistakes that have arisen.

TABLE OF AFFECTIONS WHICH MAY BE, OR HAVE BEEN, CONFOUNDED
WITH OVARIAN TUMOURS.

I. SMALL INTRA-PELVIC OVARIAN TUMOURS ARE LIABLE TO BE
MISTAKEN FOR—

- | | |
|--|---|
| 1. <i>Tumours of the broad ligaments</i> , nearly always cystic. | 6. <i>Pregnancy</i> |
| 2. <i>Dilatation of the Fallopian tubes</i> —hydrosalpinx, &c. | 7. Extra-uterine pregnancy. |
| 3. Pelvic lymph—peritoneal, or in the connective tissue. | 8. Retroverted or retroflexed uterus. |
| 4. <i>Pelvic abscess</i> | 9. Fæcal accumulation. |
| 5. Pelvic hæmatocele—peritoneal, or in the connective tissue. | 10. <i>Uterine Fibroids</i> |
| | 11. <i>Pelvic cancer</i> . |
| | 12. Osteomata of pelvis |
| | 13. Vaginal prolapse—rectocele, enterocele, or cystocele. |

II. ABDOMINAL OR PELVI-ABDOMINAL OVARIAN TUMOURS ARE LIABLE TO
BE MISTAKEN FOR—

A. Pelvic Cysts, including—

- | | |
|--|------------------------------|
| 1. <i>Cysts of the broad ligaments</i> | 2. Spinal cysts—spina bifida |
|--|------------------------------|

B. Intra-peritoneal Deposits or Fluid Accumulations.

- | | |
|--------------------|--------------------------------|
| 1. <i>Ascites</i> | 4. Pelvic abscess |
| 2. Pelvic hæmatoch | 5. Pelvic or peritoneal cancer |
| 3. Pelvic lymph. | |

C. Uterine Enlargements, due to—

- | | |
|---------------------|-------------------------|
| 1. <i>Pregnancy</i> | 6. Physometra |
| 2. Mole | 7. <i>Fibroids</i> . |
| 3. Hydramnion | 8. <i>Fibro-cysts</i> . |
| 4. Hæmatometra. | 9. Cancer. |
| 5. Hydrometra | |

D. Abnormalities of the Abdominal Walls.

- | | |
|-------------------|-------------------------|
| 1. Fat. | 5. Cysts. |
| 2. Hypertrophy | 6. Solid growths. |
| 3. <i>Edema</i> . | 7. Spasm—phantom tumour |
| 4. Abscess | |

E. Cysts of Extra-pelvic Structures.

- | | |
|-----------|---------------|
| 1. Kidney | 4. Pancreas |
| 2. Spleen | 5. Peritoneum |
| 3. Liver | |

F. Hydatids of any Abdominal or Pelvic Organs or Structures.

G. Visceral Growths or Displacements, including Cancer of the

- | | |
|-------------|----------------------|
| 1. Kidneys. | 4. Lymphatic glands. |
| 2. Liver. | 5. Peritoneum. |
| 3. Spleen. | 6. Omentum. |

H. Distention of Viscera.

- | | |
|-------------------------|---|
| 1. Tympanites. | 5. Hydronephrosis and dis- |
| 2. Distended stomach. | tended ureters. |
| 3. Faecal accumulation. | 6. <i>Hydrocoele</i> , <i>pyoscoele</i> , |
| 4. Distended bladder. | &c. |

I. Extra-uterine Pregnancy.

K. Spinal Abscess.

The first group, that which deals with the affections simulating small intra-pelvic ovarian tumours, may be treated with great brevity. I have given above the physical signs which characterise such small ovarian tumours, and any marked departure from these will excite doubt, at least. In most cases delay is justifiable and advisable, until the mode of growth and development renders the diagnosis more certain. In cases of doubt, and yet of urgency, aspiration will furnish some negative evidence at least, and enable us to set aside abscess or hæmatocele, while the presence of clear fluid will render the diagnosis of a cyst of some kind almost quite certain. The remotest probability of *pregnancy* will always enforce delay. *Cystic tumours of the broad ligaments*—of which more anon—can rarely be differentiated in this stage; the presence of very watery fluid on aspiration may render their existence probable, but that is all. *Fallopian distention*, of non-inflammatory kind, presents equal difficulty: it rarely reaches great dimensions, and, if removal become advisable, a mistake would not be of very great importance. *Purulent Fallopian distention* is more likely to be mistaken for *pelvic abscess* than for small ovarian tumours, and either of the former will have a distinct history of inflammation, which may lead to aspiration. If the presence of a cyst had not been noted previous to the occurrence of these inflammatory symptoms, it is hardly possible to differentiate a small suppurating ovarian cyst, and treatment by aspiration or by abdominal section would be equally called for, or uncalled for, in either case. *Exudations of lymph* into the pelvis, as well as the *exudations of blood* due to *hæmatocele*, give rise to swellings, which remain to be described in a subsequent chapter. It must suffice here to say that they gradually become harder and harder after their first pouring forth, that they have a very distinct history of inflammation in the former case, or of shock and sudden supervention in the latter, that they have special peculiarities of shape and position, and that they are utterly fixed and welded into the surrounding textures.

so that it is impossible to see how they can well be mistaken for a smooth globular and movable ovarian tumour. The diagnosis of a *retroverted* or *retroflexed uterus* has been fully given; its reposition, or the passage of the sound into its cavity, is conclusive against the diagnosis of ovarian tumour. The pitting on pressure of a *fixed mass* should at once excite suspicion, and lead to an examination *per rectum*, or to the use of enemata. No one ought by any possibility to mistake a *prolapsed vaginal wall* for an ovarian cyst. Its careful replacement is sufficient for the diagnosis, and a coexisting cyst, large enough to press down the vaginal walls, should easily be recognised by bi-manual examination, and by the other marks significant of pelvi-abdominal tumours. *Bony growths* of the pelvis are distinguishable by their position, their immobility, and their intense hardness. *Fibromata* and *fibrocystomata* of the uterus are more fully noticed under the next section. When small, subserous, and confined to the pelvis, their differentiation from small ovarian tumours may be a matter of difficulty; it will depend on a very careful examination of their connection with the uterus, bi-manually and by sound. If they possess a long pedicle, and there is no great general uterine enlargement nor menstrual disorder, their slow rate of growth and innocuousness may lead to sufficient certainty for all practical purposes, although it may not be absolutely diagnostic.

The diagnosis of abdominal or pelvi-abdominal ovarian tumours is a matter of much more practical importance, and one much more frequently called for. Of the sources of error here, four stand out with so much greater prominence than the others that they will be first and more fully discussed. These are cysts of the broad ligament, ascites, fibroids and fibro-cysts of the uterus, and pregnancy.

Cysts of the Broad Ligament. Up to the present time I have refrained from more than mentioning the fact that, not very infrequently, cystic growths may arise from some portion of the broad ligament, which very closely simulate true ovarian cysts, and which have undoubtedly been often removed without the difference of origin having been discovered. A good deal of discrepancy exists even in the most recent treatises as to the real origin and pathology of these cysts. By most writers the small tubes of the parovarium (fig. 199) are credited with being their original site, and these are also credited by Alban Doran with the tendency to develop cysts which are prone to papillomatous degeneration, by others they are spoken of as cysts of the peritoneum itself, growing from between the layers of the broad ligament, a stray ovum, has also been supposed capable of producing a similar cyst, and the so-called hydatid of Morgagni occasionally develops a cystoma. The most recent evidence would tend to show that simple benign cysts, such as we are about to mention (fig. 186), spring from the broad

ligament itself, while those which have a tendency to degenerate have more frequently their origin in the parovarian tubules, but, owing to the difficulty of differentiation of these before operation, we may still continue to use the terms "parovarian" cyst and "broad ligament" cyst as practically synonymous, so far as regards differentiation from true ovarian cystomata. The cysts of this kind, which may be and often are confounded with ovarian cysts, are generally unilocular, although not universally so, but even those which have a thin septum or two are not distinguishable on palpation as multilocular. Tait, and some others, go the length of saying that every unilocular cyst of this region is not ovarian but parovarian (I use the common term). Their contents are thin and watery, very slightly albuminous, and of low specific gravity, but, according to the same authority, they sometimes have the character of viscid, high specific gravity, and coloration, which are found in true ovarian cysts. They are often separated from the ovary and Fallopian tube by a pedicle, and may thus be removed, leaving these structures intact. Their walls are said to be lined by epithelium of varying character, including sometimes the columnar, and the discovery of this in the contents would therefore not be of differ-



FIG. 188. A simple Broad Ligament Cyst (Doran)

ential value unless it were ciliated. Paralbumin is said to be invariably absent from their contained fluid, but I fear that paralbumin must be regarded as a myth for practical diagnostic purposes. Most authorities maintain that after tapping they may never return, and I agree with them as far as my experience goes; but others, Tait again among the rest, say that it is only a question of time. Their growth is usually rapid, sometimes slow.

From all this, four questions arise.—(1) What are their resemblances to ovarian tumours? (2) What are their differences? (3) Can they be positively differentiated? and (4) If so, *cut bono*? 1. Taking it for granted that they are always apparently unilocular, they have no resemblance to a tumour which is solid or which has masses of apparently solid substance incorporated with it. They only resemble, therefore, those ovarian tumours which have one large predominating cyst. But these they resemble completely, in their position

and consequent physical signs, in their fluctuation, and in the localisation of their fluctuation and percussion dulness, and its comparative unchangeableness in various positions of the patient. Their physical signs are therefore alike, unless we admit the impossibility of a unilocular ovarian tumour; and even then we must also admit the impossibility of deciding whether a tumour is really unilocular until we have removed it. I utterly repudiate the idea of Atlee that the most experienced hand can differentiate the *thinness* of fluctuation in a parovarian cyst from that in many true ovarian cysts. 2. What are the differences between ovarian and parovarian cysts? The character of the contained fluid in the latter is the only one which is at all generally relied upon—its watery colour, transparency, and fluidity—and this can only be certainly ascertained by tapping, and, as we have seen, this is not universally acknowledged to be certainly differential. 3. Can we, therefore, positively differentiate the two things? I believe not; and that all we can say is, that an apparently thin unilocular cyst is very possibly not ovarian but a cyst of the broad ligament, and that if it entirely disappears on tapping, leaving no evidence of a thick cyst wall or of other cysts, and emitting a clear watery fluid, it is most probably so. 4. The advantage of attempting the diagnosis depends on whether it is true that such cysts, after tapping, frequently, or even occasionally, are permanently cured, or even if they are sometimes cured for several years. On the latter point all are agreed, on the former there is discrepancy among the best authorities. I am perfectly certain that they may disappear for so many years, that a return is more probably due to a fresh tumour than to a refilling of the old one. I consider this an argument in favour of tapping an apparently thin-walled unilocular tumour, partly invalidated, however, by the remote possibility of its containing the elements of proliferating papilloma; but beyond this I consider the differentiation of no importance, and henceforth I will include these parovarian or broad ligament tumours along with those of undoubted ovarian origin in considering their differentiation from other abnormalities.

Ascites.—In simple and uncomplicated cases, it ought to be easy enough, by palpation and percussion alone, to distinguish an ovarian cystic tumour from free fluid in the peritoneum. The typical dulness in the flanks, and resonance in front, of ascites, and the reverse conditions in connection with tumours, have been mentioned (fig. 187), and should always be carefully marked out in the dorsal decubitus. If this is done, it is easy to ascertain the changes which occur in the areas of dulness or resonance when the position of the body is changed from side to side, or by raising the shoulders or pelvis. As is the case in many other circumstances, the difference between light and firm percussion at the margins of dulness has considerable diagnostic value. An ovarian tumour being

globular, the upper margin of dulness, when the finger is lightly placed on it, and the percussion is light, will not correspond with the summit of the tumour. If, therefore, the percussed finger or pleximeter be pressed more firmly just above the margin, and the percussion be made more forcibly, the slightly overlapping intestine will be displaced upwards, and the dull sound of the convexity of the tumour will be brought out, so that the convex area of dulness will be correspondingly increased upwards to the extent of an inch or more. Supposing, however, that we have only peritoneal fluid, with floating intestine, and a resonant area with its convexity downwards, firm percussion below the limit of this will displace the fluid, and will bring out the resonance of more intestine, which was prevented by its normal attachments from rising to the summit. To those who have studied percussion in the only true way, viz., as an interpreter in the first place merely of the physical condition of what is below; and then, secondarily, by a process of reasoning, as bearing on various presumptive facts, the diagnosis of an ascending pelvic tumour containing fluid, from free fluid in the abdominal peritoneal cavity, is perfectly simple, and might be entirely relied upon if it were not for the fact that adhesions of organs occasionally occur, from even slight inflammatory attacks, and prevent those organs from obeying the physical laws which their specific gravity would otherwise impose upon them. The complications thus produced are sometimes so extraordinary that the utmost skill is baffled in arriving at a certain diagnosis, and nothing is left but to make an exploratory incision for the purpose of deciding the question; but the more common sources of error must be indicated. By inflammation of the peritoneum, acute or chronic, the intestines may be so bound down that they cannot rise above the peritoneal fluid, and so the laws of gravity are set at defiance, or the mesentery is in some cases abnormally short, with a similar result, or adhesions may occur between portions of the peritoneum, so that an ascites is really encysted, and that in front of the abdomen; or tubercular or cancerous deposits may so mat together the intestines, and cause encystment of portions of the accompanying ascitic fluid, that a multilocular cyst, with its dulness at some definite places and fluctuation at others, is almost perfectly simulated.

I must indicate here the chief reasons on which we rely for a decision between ascites and ovarian cysts. The *percussion signs* have been already mentioned. They rarely fail us except in the case of enormous unilocular cysts, or equally enormous ascitic distentions, or in the case of peritonitic adhesions. Tapping or exploratory incision are then our only resources, and these will be more fully discussed under the heading of treatment. The *history of the case* is, of course, of very great service, but it may also mislead. In ascites, from whatever cause, we have generally long-continued ill health or violent

inflammatory symptoms; whereas in ovarian tumour the patient's health is often long unimpaired, and considerable weight is due to this, but not too much, especially if the physical signs are not in accordance with the presumption derivable. I have opened the peritoneal cavity and found the peritoneum quite half an inch thick in front from chronic peritonitis, with tubercular nodules all over its lower portions, when a most intelligent practitioner had failed to detect any evidence of rise in temperature or other inflammatory or tubercular conditions during a period of more than a year. This patient has, moreover, enjoyed perfect health for over twelve months since the operation, and it shows no signs of deteriorating. The coexistence of *cardiac, hepatic, renal, or other visceral disease* must always be carefully sought for. I know of one case where an examination of the heart only a few hours before a proposed ovariectomy led to a reinvestigation of the case, and a perfect assurance of its ascitic nature. *General dropsy*, of course, and *oedema of the lower extremities* most frequently, are more common in conjunction with ascites than with ovarian tumour. The *shape of the abdomen* is flattened in ascites, in ovarian tumour it is protuberant; but this landmark is partly lost when either disease has attained to its utmost limits. The protuberant umbilicus is more common in the former affection, while the false ribs more readily bulge outwards and give a peculiar form to the thorax when pressed by a very large ovarian cystoma than when pressed by ascitic fluid, which has less resistance elsewhere. The *aortic pulsation* is more readily felt through a tense ovarian cystoma than through a tense ascitic abdomen. If the phenomenon is present without much pressure of the hand, it speaks strongly in favour of the former, but it also points to the necessity for looking for some *tertium quid*. The phenomenon of *abdominal ballottement*, i.e., the sensation which is given to the fingers when, pressed suddenly and firmly upon a fluid sac, they encounter a floating and apparently solid mass which gently rebounds, is often encountered with ovarian cysts containing others much smaller and more tense, but it is also found in ascites when that is caused or accompanied by solid tumours of any kind which are not fixed. I have seen it thus cause mistakes in diagnosis rather than render assistance. A single and small included mass thus felt in a very large fluid cavity is, *caeteris paribus*, rather in favour of ascites. *Examination per vaginam or per rectum* throws very great light on many cases of doubt. In the case of an ovarian tumour of any size, the uterus is nearly always deflected in some direction, chiefly towards the pubes, and often pretty firmly pressed there, while in simple ascites it retains its normal position as a rule, and can be felt by the sound to be suspended there as lightly as in the normal condition. A very large unilocular or almost unilocular cyst may hardly be perceptible as bulging downwards through the pelvic brim, or, if it is,

there will probably be true fluctuation between the examining finger and the hand on the abdomen. Ascites may give the same positive or negative signs. If, however, there is a bulging mass in Douglas's pouch, which, though not hard, is yet evidently less fluid than the abdominal swelling, we have very strong evidence indeed in favour of ovarian cysts of multilocular character. A pretty hard mass felt here may still be the lower end of an ovarian cystoma, but it may also be pelvic cancer or uterine fibroid, or sarcoma of the ovary, or other matters accompanying, and probably the cause of, the ascites. One diagnostic point of very great, although not of absolute importance, still remains, viz., the *evidence furnished by the fluid drawn off from a doubtful case by aspiration or tapping*. Can an absolute diagnosis be made in this way, supposing always that no admixture of ascitic and ovarian fluids has taken place? The discovery of true columnar epithelium in the fluid would, I think, be certain evidence in favour of tumour, but not so the negative evidence derivable from its non-discovery. The ovarian corpuscles of Drysdale, before referred to (p. 406), and often more easy of discovery than columnar epithelium, are said to have been found in ascitic fluid, although certainly they are very rare, while they are equally common in ovarian fluids. The physical and chemical differences of the two fluids are marked *when typically present*. Spontaneous coagulation is not confined to nor is it always present in either, but it is very rare in the ovarian cases and moderately common in the ascitic; when prompt and complete it is, however, almost invariably due to neither, but to a uterine fibrocyst. Very pale watery fluid is found in unilocular cysts, especially those of the broad ligaments. Any great amount of viscosity is almost certainly ovarian, but slight degrees are not diagnostic. If the specific gravity is over 1018, it is most likely an ovarian fluid, but Garrigue has found it 1025 in ascites; below 1010 a cyst of the broad ligament, or an exceptional cyst in a cystoma is probable. Both ovarian and ascitic fluids coagulate on boiling, and the further test for paralbumin in the former is discredited. On the whole the physical appearance when well marked, or the discovery of columnar epithelium, and perhaps of Drysdale's cells, can alone be greatly depended on.

The coexistence of ascites with solid ovarian tumours is rather the rule than the exception, but it may also coexist with ordinary cystomata, thus rendering doubtful the evidence obtainable from percussion and also from aspiration; and the bursting of small cysts, or their opening by tapping, may commingle the two fluids. Such cases should be borne in mind as possible, but operation under mistake will in such a case be more advantageous than the contrary procedure. I have purposely omitted to mention several diagnostic points insisted on by writers of eminence, but which are not accepted by others of equal weight. The

difficulties in certain cases are great enough without encumbering the tyro with many facts on which he is told he must not rely.

There is one other source of difficulty in the differentiation between ascites and ovarian tumour which is fortunately a rare one; I allude to the presence of gases in an ovarian cyst. This, if extensive, would completely invalidate all our rules as to physical examination. I am not aware, however, that it has ever occurred except in a case that had been diagnosed previously to the formation of gas, the complete change in all the formerly observed signs leading to escape from error. Air admitted on tapping may produce this result, or some accidental communication with hollow viscera, but septic putrefaction after tapping or aspiration is certainly the usual cause.

Fibroid Tumours of the Uterus. In their very early stage these may be mistaken for ovarian growths, but the differentiation of these intra-pelvic growths has been sufficiently insisted on already. Larger fibroids of the uterus have, however, been not infrequently mistaken for ovarian tumours, although their physical properties are very different from those of the cystic form. But a large fibroid may at times have a certain amount of softness, owing to its lax fibre or to serous infiltration, and a cystoma with much connective tissue and excessively small cysts may appear almost as hard and unfluctuating as a fibroid. If such a fibroid happened to be sub-peritoneal, pedunculated, and unaccompanied by others, there may be no clue to diagnosis from any effect on the functions or physical characters of the uterus, and judgment may have to be suspended. Such a hard tumour, if growing very slowly or not at all, and giving rise to few or no inconvenient symptoms, would almost certainly be a fibroid, however, and in deciding on treatment this view should be maintained, i.e., it should be left untouched until further developments led to a reconsideration of the matter.

The great majority of fibroids, however, so involve the uterus, or are accompanied by others which do so, as to lead to changes in the function of that organ, and to notable alterations in its form or position which render the diagnosis from ovarian growths comparatively easy. It is in the fortunately somewhat rare occurrence of *fibrocystic* tumours (p. 284), that we meet with the greatest difficulty, the evidence derivable from the absence of fluctuation being there unavailable. The rarity of this cystic degeneration of fibroids, although they seem to be more common in America, renders their occasional occurrence the more puzzling. There are certain signs and symptoms common to fibroids and fibrocysts, but differential from ovarian tumours, which may be best given in tabular form, followed by those peculiar to fibrocysts alone.

Universal hardness without any localised fluctuation characterises the pure fibroid and a very few ovarian cystomata, and localised fluctuation

with a considerable general hardness characterises fibro-cystoma and not a few ovarian cystomata.

TABLE OF DIFFERENTIAL CHARACTERS OF UTERINE FIBROIDS OR FIBRO-CYSTIC TUMOURS, FROM OVARIAN CYSTOMATA.

A. UTERINE FIBROIDS.

- 1 The age of the patient usually corresponds to the child-bearing period of life
- 2 The tumour is generally tolerably central, but not always.
- 3 The rate of growth is generally slow
- 4 Menstruation is generally profuse, often dangerously so. Metrorrhagia is frequent. Amenorrhœa hardly ever exists.
- 5 The uterine cavity is generally elongated, often much so.
- 6 The uterus is evidently part of the tumour, and moves with it.
- 7 The cervix uteri may be normal, but often appears as a short butt-like appendix to the hard mass, or it may be completely stretched out as in late pregnancy.
- 8 The uterus forms part of the lower segment of the tumour, and the position of its true fundus is often indistinguishable.
- 9 Pressure signs on the bladder, rectum, &c., are common.
- 10 The general health is commonly scarcely affected, except by metrorrhagia.
- 11 Aspiration if employed would give negative results.

B. OVARIAN CYSTOMATA.

1. The age is not limited.
2. The tumour is usually quite lateral, at any rate in the earlier stages.
3. The growth is usually rapid, the more polycystic or pseudo-solid the more so.
4. Menstruation is normal or deficient, sometimes irregular, rarely if ever profuse, unless from uterine complications.
5. The uterine cavity is normal in length, or nearly so.
6. The uterus is generally separable by manually or by sound.
7. The cervix uteri is normal, unless itself diseased.
8. The uterus is usually pushed out of place, laterally, anteriorly, or posteriorly, or it may be drawn up or pushed down. In any case it is nearly always possible to trace its body and fundus.
9. These signs are less common or obtrusive.
10. The general health is also often unaffected, but emaciation, and other untoward symptoms mentioned above follow in the wake of large or rapidly growing tumours.
11. Aspiration nearly always yields some fluid.

The fibro-cyst exhibits the above named phenomena with one or two very important differences, all of which tend to assimilate its signs to those of an ovarian tumour, and to render its diagnosis therefrom more difficult.

1. While the rate of growth is usually slow at first, as with a simple fibroid, it becomes more rapid after cavities have formed, and may then be as rapid as that of any ovarian tumour.

2. Fluctuation is felt in certain spots, and these may in time occupy much of the whole tumour space. Tapping or aspiration will also show the existence of fluid.

3. The fibro-cystic wall is generally more livid than the surface of a fibroid or ovarian tumour. But this sign is only of service after the abdomen is opened.

It becomes, then, a very important question whether the nature of the fluid obtained from a fibrocyst by aspiration is sufficient to distinguish it from that which is ovarian. From all that has yet been written on the subject, the fluid of fibrocysts is established as being clear, yellowish, or dark brown. Most frequently it coagulates spontaneously and very quickly, and as this rarely if ever occurs in ovarian fluids, its occurrence would be very strongly in favour of fibrocysts; but the absence of the phenomenon is not of equal value. There are no microscopic appearances in the fluid of a fibrocyst of differential value, but the presence of columnar epithelium would be of absolute value against its diagnosis, as no such structure is possible under the circumstances.

Pregnancy. The diagnosis of early normal pregnancy from ovarian tumour, should not present any considerable difficulty. True, the uterine cavity forms a kind of cyst ascertainable by manual examination if not otherwise. But the same manipulation will unmistakably show its relation to, and connection with, the cervix uteri, even although that structure may not have yet undergone any of its normal changes. Some at least of the ordinary signs and symptoms of early pregnancy (*see* Appendix) will also be present, and when there is the faintest doubt in the matter, it is imperatively necessary to give pregnancy the benefit of it. This is especially required in the case of the unmarried, where mistake is more likely to occur. No operative proceedings would be called for under even doubtful circumstances until the tumour had arrived at such a size as would involve absolutely characteristic signs in the event of pregnancy. After the fourth or fifth month, although calamitous mistakes have been made, they must invariably have been due to want of sufficiently careful observation, rather than to the absence of the means of differentiation. In every case, when the uterus is not clearly to be felt of normal size and distinct from the now considerable tumour, every sign of normal pregnancy must be borne in mind, and its presence or absence clearly ascertained. If this be done, I am convinced that mistake is impossible, at any rate in the direction which is most dangerous to the patient,—where pregnancy is supposed to be ovarian tumour. To mistake an ovarian tumour for pregnancy would certainly bring discredit on the practitioner, but a very short time will suffice to expose the error. The symptoms of pregnancy due merely to surrounding pressure or to various sympathies in other parts

of the system, although carefully to be noted, are never to be relied upon, except as imposing additional caution: they may almost all be absent in pregnancy or present with uterine or ovarian tumours. I allude to such matters as morning sickness or other digestive or respiratory or nervous disorders, swelling of the breasts, darkening of the areola (*see* Appendix), swelling of the legs or vulva, congestion of the vagina, &c. Among the local physical signs, some are of considerable although not of conclusive importance, others are perfectly differential. In such an important matter of differentiation, it is advisable to give no positive and final opinion, and certainly to adopt no operative proceedings, until the certain signs are clearly discovered or positively negatived by time, if in no other way.

Omitting then, many of the minor points, which are void of any positive diagnostic force in themselves, we may tabulate the points of difference which must be insisted upon between a gravid uterus of at least five or six months and an ovarian tumour.

TABLE OF DIFFERENTIATION BETWEEN PREGNANCY AND OVARIAN TUMOURS.

PREGNANCY.	OVARIAN TUMOUR.
1. Enlargement follows a definite rate.	1. Enlargement may be more rapid but is usually much slower.
2. Tumour is smooth, sometimes obscurely fluctuating, often contractile under manipulation, central, or somewhat to the right.	2. Tumour is smooth or with decided lobular projections, distinctly fluctuating in most cases, never contractile, generally unilateral for a considerable time.
3. Venous enlargement or œdema of abdominal walls is rare.	3. These are common in the case of large tumours.
4. Menstruation is arrested for a period corresponding with the other signs, exceptions occasional.	4. Menstruation is often scanty, or is arrested, the date seldom corresponds with the signs and history of a gravid uterus.
5. Abdominal ballottement may be present, also vaginal.	5. Vaginal ballottement is never simulated abdominal occasionally.
6. Fœtal movements may be positively felt.	6. There is nothing which perfectly simulates fœtal movements.
7. The typical mammary areola of pregnancy is very significant in a primipara, also the umbilical areola.	7. The mammary areola of pregnancy may be pretty closely simulated, the umbilical areola less seldom.
8. The cervix uteri and lower segment of the uterus undergo specific changes corresponding to the length of pregnancy.	8. The cervix is normal, the uterus probably displaced, but traceable beside or below the tumour.
9. The uterine souffle is often clearly heard.	9. A precisely similar souffle is not uncommon with fibroid growths, and has been heard with an ovarian tumour.
10. The fœtal heart-sounds are absolutely diagnostic of pregnancy. They may, however, be extra-uterine, and with a dead child they are not heard.	10. The fœtal heart sounds are not heard unless pregnancy be present as a complication.

Having discussed the most common sources of error, we must now mention (in many instances very summarily) those which are of less frequent occurrence, or less likely to cause mistakes. Following the order of the table on p. 120, we find

Spina Bifida. This, without a distinctive history and external manifestations, is so rare that it may be dismissed with the remark that its fluid, according to Garrigues, has no albumin nor histological elements.

Hæmatocoele (see Chap. XIX.).—I am not aware of any mistake in this direction of late years, since the pathology of hæmatocoele has been clearly worked out. With any large accumulation of blood in the peritoneum or pelvic cellular tissue, there is a history of sudden super-vention with shock. In a recent case, while the blood is still fluid, mistake is impossible. Subsequently coagulation takes place, the mass is encysted by lymph, and becomes hard and fixed, and, if intra-cellular, it inter-penetrates the tissues of the pelvis below. With a badly detailed history it may easily be mistaken for pelvic lymph, cancer, or some other affections, but hardly for a smooth, movable, or freely fluctuating ovarian tumour. Aspiration would detect only blood or bloody serum.

Pelvic Lymph, the product of pelvic peritonitis or cellulitis. This also yet remains to be described (Chap. XIX.). It will be seen that we have here also a very distinguishing history of acute or sub-acute inflammation, following delivery or some other traumatic or septic cause, followed by exudations, which, although more or less fluid at first, speedily become solid, and the relations of which to surrounding parts will be afterwards fully described. A careful study of the circumstances of these exudations should prevent mistake, but occasionally both hæmatocoele and inflammatory exudation degenerate into—

Pelvic Abscess.—We have here a collection of fluid, often occupying much the same situation as an ovarian cystoma, and more or less encysted. We still, however, have the history of the case to guide us, and we have the temperature, pulse, acute pain, and other signs which point to inflammation or suppuration. The discovery of pus by aspiration would differentiate an ordinary ovarian tumour at once. A perfect history of hæmatocoele or pelvic inflammation, and the absence of a previously diagnosed cyst, without inflammatory symptoms, would negative the diagnosis of ovarian tumour, but without this source of enlightenment we might possibly have to deal with an ovarian tumour which had undergone suppuration within its walls. It would, under these circumstances, be our duty, by careful bi-manual examination, to try and solve the difficult problem whether the case should be treated as a pelvic abscess by vaginal tapping or incision, or as a suppurating ovarian cyst by abdominal section.

The history, the apparently clear and free margin of the upper part of the mass in the case of a tumour, the involvement of the pelvic structures below in the case of abscess, would enable an expert to come to a fairly probable solution of the difficulty.

Pelvic or Peritoneal Cancer.—Pelvic cancer is for the most part secondary to disease of the uterus or other viscera, and its diagnosis is therefore comparatively simple. But when primary masses are met with at the pelvic brim, and when they are accompanied, as they almost universally are, by ascites, some of the features of a cystoma, with its more solid portions dipping into the pelvis, are presented. We must rely on the ordinary physical tests to prove the intra-peritoneal situation of the fluid, and that being ascertained, the diagnosis of cancer as its cause will depend on the hard nodulation of the mass, on the rapidly increasing asthenia, and on the evident infiltration of surrounding parts. Fowls (*op. cit.*) has described certain microscopic appearances which he considers as proving that ascitic fluids are connected with malignant growths or peritoneal cancer, but as Knowsley Thornton and Keith have each found them in connection with non-malignant growths, they need not be here further insisted upon.

Molar Pregnancy. The differentiation of this condition is rather from normal pregnancy than from ovarian tumour. There will always be sufficient of the ordinary signs of pregnancy to delay any attempts at ovariectomy, and the practitioner must depend on his familiarity with obstetrics for other indications for treatment.

Hydramnion, or undue accumulation of the amniotic fluid, causes a pregnant uterus, when examined only through the abdomen, to resemble very closely a large unilocular cyst, but if the history of the case is carefully weighed, it is only in its too rapid increase, and in the undue preponderance of its fluid contents, that the uterine swelling differs from what is normal in pregnancy. The physical characters of the lower segment of the uterus are those of advanced pregnancy, and the whole history points in the same direction.

Hæmatometra.—Congenital accumulation of blood in the uterus, from atresia of any portion of the genital canal (p. 117), can only be mistaken for ovarian tumour by one who ignores the history of amenorrhœa, with its accompanying and characteristic pain, and gradual distention of the uterus, and who declines to avail himself of the evidence furnished by internal examination. The history of morbid parturition or traumatic accidents, followed by atresia and suppressed menstruation, is with equal ease made clear by a careful utero-vaginal examination; indeed, it is mainly in deference to the fashion observed by other writers that I have included in our list either hæmatometra or

**Hydrometra, or
Physometra).**

Uterine Cancer. The symptoms and signs of this affection, when affecting the body, have been already mentioned. I cannot see how they can lead to error in differentiation so far as ovarian tumour is concerned, unless through the coexistence of ascites. Pain, hæmorrhage, foetid discharges, and other symptoms are foreign to ordinary ovarian growths, and the ascitic accompaniment has its own differential physical signs.

Fat in the Abdominal Walls. This occurs to a very great, sometimes an enormous, extent, mainly about the time of the approaching menopause, and has been mistaken for ovarian tumour, pregnancy, fibroid tumour, and other affections. Johanna Southcott's was a case in point. Although the deposit is generally uniform, it is sometimes much lobulated. I have had several such cases sent to me for operation, but the previous examination has never been at all careful. The whole mass can be lifted up and felt to be in the walls, which when grasped are evidently several inches in thickness. Not a single percussion sign of ovarian tumour is clearly marked, and if the percussion is firm and strong, these may be demonstrated to be absent. Vaginal examination shows only normal conditions.

Hypertrophy of the other structures of the abdominal wall is much more rare, but is open to the same tests. In a case of the sort, anaesthesia is always advisable, as much of the apparent hypertrophy may be merely spasm. A case of true elephantiasis of the walls is related by Atlee.

Edema of the walls often coexists with ovarian tumour, and should always lead to careful examination for underlying abnormal matters. The pitting on pressure is characteristic of the condition itself, and a careful examination of the patient's heart, liver, kidneys, &c., will reveal the cause when subjacent tumour cannot be detected.

Abscess of the wall itself is a rare occurrence. If large, it would show an isolated fluctuating tumour which might be difficult to diagnose if we had no history of previous local inflammation. To the practised hand, however, even then the tumour would seem to be so superficial, so immovable in any way, and so unconnected with pelvic signs or symptoms, that aspiration would be called for and would solve the question.

Cysts of the abdominal wall, fortunately almost unique, would, from the absence of inflammatory symptoms, be more liable to create error. Strong suspicions would be aroused by the physical characteristics which are common to them and to abscess, and aspiration would show a thin serous fluid with none of the characters of ovarian fluids, or even of those of the broad ligaments or Fallopian tubes.

Solid growths in the wall should be more easy to recognise than cysts. They can be lifted up and isolated from all their surroundings, and, if growing at all rapidly, would demand an incision for their removal or diagnosis, which might in cases of doubt be termed and prepared for as an exploratory abdominal section. The exploring needle might furnish evidence of malignant structures.

Phantom Tumour. This curious condition is not very rare, especially about the menopause or in recently married women, and is closely allied to what is known as spurious pregnancy. In both cases we have a spasmodic contraction of the abdominal muscles, which at the first glance closely resembles an abdominal tumour or a pregnant uterus. There is nearly always a certain amount of tympanites accompanying it, but there may also be large accumulations of fat. The patient is always of hysterical temperament, but there is often great doubt as to how far she is aware of the mimicry she is enacting. As obstetricians are all aware, she may also simulate many of the other signs of pregnancy. I have known the foetal movements admirably imitated in a case where I feel sure the deception was not intentional. Mistake in such a case for either ovarian tumour or pregnancy is inexcusable. The percussion signs are absolutely wanting, as are those furnished by vaginal examination. In the slighter cases the tumour will disappear under steady pressure if the patient's attention be otherwise engaged, or if she be made to perform deep and prolonged expirations. Anæsthesia settles all possible doubt, and enables us bi-manually to ascertain the normal condition of parts.

Renal Cysts.—If seen at all early, a renal cyst should hardly be mistaken for an ovarian tumour, however unilocular. It will be found to occupy the lumbar region, and although gradually extending downwards and forwards it will generally push the intestines in front of it. Its growth is generally very slow, and careful inquiry and investigation may show previous or existing renal disease. There may or may not be occasional very abundant discharges of urine, followed by diminution or temporary disappearance of the tumour. The increase is evidently from above downwards, and there is an absence of intra-pelvic signs of any kind. In any case where these physical conditions are present, recourse should be had to aspiration. If urea or uric acid be present in the limpid fluid, as it frequently is, the diagnosis is perfect. The long columnar epithelial cells of ovarian tumours would certainly be absent, but, in the absence of distinct urinary constituents, the physical examination, after drawing off a considerable quantity or the whole of the fluid, and careful watching of the mode of refilling, are to be mainly depended on for diagnosis. I cannot help thinking that some of the difficulties in the way of diagnosing tumours of pelvic origin from those which originate elsewhere, mentioned in various excellent treatises, are partly due

to the fact that they are written by surgeons, who, however able otherwise, were not so familiar with bi manual pelvic examinations as a little more extended gynecological practice would have rendered them.

Splenic Cysts.—These are so rare that there is little known accurately as to their contents. Their mode of growth downwards ought to prevent mistakes. They would probably be accompanied by hæmic changes.

Hepatic cysts, with the exception of hydatids, could hardly fail to escape notice long before their size and descent in the abdomen simulated ovarian tumour.

Pancreatic cysts are referred to as containing fluid very like that of ovarian multiple cystomata, columnar epithelium included, but I know of no recorded case where the physical signs led to a diagnosis of ovarian tumour.

Peritoneal cysts, including those of the omentum, are again very rare, unless cysts of the broad ligament or encysted ascites be included. The physical signs of one in the lower part of the abdomen would be such that diagnosis would be almost impossible from an ovarian cystoma with a long pedicle. Even tapping would only show negatively the absence of the more viscid kinds of ovarian fluid and of columnar epithelium. A mistaken diagnosis would here be highly excusable, and might lead to successful extirpation.

Hydatids.—I have placed these in a separate class, for although they may occasionally be met with in any part of the abdomen, and their physical signs are those of multilocular cystoma, they have certain peculiarities which will generally lead to an accurate diagnosis of their existence. The liver being by far the most common primary seat, the tumour will, if seen early enough, be traceable downwards and not upwards in its growth. Some writers lay great stress upon what was termed by Piorri the hydatid fremitus; but Cobbold asserts that this scarcely differs from the ordinary impulse communicated by fluid matter within any form of tumour, and Sir W. Jenner has only once in all his vast experience met with it. If any of the accephalocystic vesicles are discharged *per rectum* or otherwise, the diagnosis is rendered clear. Without tapping I do not see how a hydatid mass growing from the pelvis or lower abdomen is to be differentiated, but if there are corresponding masses elsewhere, or especially under the liver, aspiration should certainly be employed. This will reveal the clear watery contents, of low specific gravity—1011, and containing much chloride of sodium—and a careful search will generally detect the characteristic hooklets of the *Echinococcus*. A mistake in diagnosis has not infrequently proved valuable to the patient by leading to the extirpation of portions of the hydatid mass, followed by the disappearance of the rest.

Solid or Malignant Tumours of the Kidney, Liver, and Spleen have figured much more seldom as causes of error than cysts of these organs. Until they have attained an enormous size, they can never reach sufficiently into the cavity of the pelvis to give rise to mistake, and a solid ovarian tumour of such a size would certainly be malignant, and would attract attention long before it had reached the level of these organs. That strange phenomenon, a loose kidney, has led to mistakes. It is, however, a less common affection than the experience of enthusiastic hospital *internes* would lead us to believe, and it is probable that an ovarian or uterine fibroid mass with a long pedicle has been more often mistaken for a kidney than the reverse. The great freedom of motion of a loose kidney, its resemblance to the shape of the normal organ, the slowness or total absence of growth, and the non-discovery of the organ in its normal situation, warrant the assumption of floating kidney, and will, at any rate, stay the hand from operation until time allows of further developments or shows their absence. I have twice met with floating kidney in combination with renal cyst. Very puzzling cases they were, but it is impossible, in a general work, to detail such exceptional combinations.

Solid Tumours of the Peritoneum, of its Glands, and especially of the Omentum, are by no means of infrequent occurrence. They are usually malignant, but in the omentum especially a great variety of growths has been found. I have seen, in one case that was operated on for ovarian tumour, an omental cyst, a fatty tumour, and a large bony mass in juxtaposition. When well isolated and unaccompanied by ascites, such masses can generally be diagnosed by their situation and want of connection with the pelvis, but ascites is most frequently present and inflammatory adhesions may cause it to be encysted. Aspiration may or may not reveal the true nature of the fluid, and the matting of intestines, lymph, and tumour may cause strange anomalies in the percussion of the solid parts. Mistakes have occurred in the best of hands and will occur again. There is one comforting point, viz., that in such a case an exploratory incision is the surest method of diagnosis, and affords the only chance of remedy.

Distended Stomach and Tympanites.—Mistakes can only arise here from want of the commonest precautions in the way of percussion. The appearance of a tumour is often caused in this way, if the abdominal walls are feeble, but here the resemblance entirely ceases.

Fæcal Accumulation. This may occur to an enormous extent in the female rectum, sigmoid flexure, and colon, and the doughy mass thus produced and felt above the pelvic brim may not be very unlike a pelvic growth. But the history of prolonged constipation, sometimes combined with a little constant mucous diarrhoea, will put us on our

guard. The first vaginal examination will detect the solid yet pitting mass above and behind, and rectal examination will complete the diagnosis, and lead to its confirmation by the action of aperients and enemata.

Distended Bladder.—Mistake here is also inexcusable. The history of retention, perhaps of accompanying retroverted gravid uterus, the local distress and constitutional symptoms in a chronic case, the central tender tumour, the soft bulging of the anterior vaginal wall, all point to the necessity for the catheter, care being taken to use a long flexible one.

Hydronephrosis and Distended Ureter. The physical characters of a hydronephrosis resemble those of a renal cyst, and in most, although not in all cases, we have the history of urinary trouble and the presence of purulent, bloody, or albuminous urine to help our diagnosis. If the ureter be greatly distended, the elongated form of the tumour may assist in differentiation.

Distended Fallopian Tubes.—The conditions which lead to distention of the Fallopian tubes—to hydro-salpinx, pyo-salpinx, or hæmato-salpinx—have yet to be described (Chap. XVIII.). If the collections so caused are large, they may be difficult to distinguish from cysts of the broad ligaments, or even from ovarian tumours. As they frequently discharge their contents periodically into the uterus, this occurrence would aid materially in diagnosis. No complete account of the microscopic appearance of their contained fluids is known to me, but, in common with ovarian tumours, they may contain columnar epithelium. This may, however, be ciliated, while that of ovarian cystomata is never so distinguished.

Extra-uterine Pregnancy.—This fortunately rare condition has been mistaken for ovarian tumour much less frequently than might be supposed. In its earlier stages it is seldom diagnosed from normal pregnancy, and unfortunately the great majority of cases terminate by rupture before the question of differentiation from other tumours is likely to arise. It is when the foetus has died and become mummified or encysted that mistake is most likely to arise. The history of the case is mainly to be relied on, a history of lapsed pregnancy, with more or less constitutional disturbance. The form of the mass is little to be relied on, for every case, and they have been several, in which I have been consulted about a supposed encysted foetus, has turned out to be something else. I showed one such to many experts, the deceased Dr McIntock among the number, at the time of the meeting of the British Medical Association in Manchester in 1877, with what appeared to be a perfectly typical history, and the only difference of opinion was as to the exact position of the child. Yet it turned out to be a case of pelvi-abdominal cancer. The stationary condition of the

tumour, combined with the history, is our surest reliance, and the diagnosis of every such case should from time to time be revised (*see* further, however, Chap. XVIII.).

Spinal Abscess. Lumbar and psoas abscess will sometimes give rise to irregular fluid enlargements, which, by their fluctuation, might simulate a cyst. But, with anything like the ordinary history to guide us, and with a careful local examination, mistake should be impossible.

This long list might have been extended, but I am satisfied that many of the mistakes described by special writers have been made only by meretvros, or before the nature of ovarian growths or of the conditions mistaken for them were understood as they now are by almost every efficient practitioner. The specialist or consulting physician must often decide this grave question of diagnosis at a single interview, but the family practitioner need never do this. I would strongly advise him to direct his attention at first mainly, if not solely, to the four important sources of error first described. Above all things, let him first eliminate normal pregnancy. Then let him turn his attention to the differentiation of uterine tumour and ascites, and afterwards try to ascertain the probability or otherwise of the tumour growing from the broad ligaments rather than the ovary. Let him then, book or list in hand, or previously well conned, go over the other sources of error. Most of them he will easily eliminate. The most deceptive are omental tumours or fibrocysts of the uterus, and these will only be probable in a certain small number of cases; but if at all probable, they demand the aid of the expert. Indeed, I have very grave doubts whether any one who has seen but a very limited number of cases is justified in finally recommending operation without a consultation of the kind, if it is at all within reach. We must pass on now to the treatment of ovarian tumours.

CHAPTER XVII.

DISEASES OF THE OVARY—*continued*. Ovarian Tumours. TREATMENT, by Exploration, Tapping, Drainage, or Removal. Ovariectomy and Oophorectomy.

INTERNAL remedies are utterly powerless in the removal of ovarian tumours, and it would be a waste of time to recapitulate those which have been occasionally tried, or even vaunted as successful. By attention to the state of the skin, bowels, &c., the patient's health may be kept at a higher standard than otherwise would be the case, and for a longer time, and much general discomfort may be avoided; but having said this, we have said all.

The treatment, unless the growth of the tumour is almost absolutely stationary, and even then, according to most authorities, must be of a surgical character. Many plans, which now appear more or less barbarous, were in vogue before the discovery of ovariectomy, and some of these continue to be mentioned in the regular text-books, and, with more reason, in special monographs. I will endeavour to confine myself to those which are really in use, under varying circumstances, and by the leading authorities. They will resolve themselves into three—(1) tapping in some form, (2) drainage, and (3) removal.

And first, a word or two about the slightest form of tapping, which is employed only for the purpose of diagnosis, the instrument used being of minute calibre, and only a small quantity of the fluid contents being necessarily drawn off. This is generally known as—

EXPLORATION.

The exploring needle with grooved surface is of no value here. The hollow needle of the subcutaneous syringe is more suitable, combined with such aspiration as the syringe, or one of a somewhat larger size (fig. 51), will afford. Used with extreme antiseptic precautions, I have no doubt of the almost perfect safety of this means of diagnosis. The light which it throws on the case may often be very slight, but in some cases, as for instance in the differentiation of purulent accumulations or hydatids, it may be invaluable, and I do not think that its use should be neglected in any case which presents evident cir-

cumstances of doubt. It may prevent a mistaken attempt at ovariectomy, or obviate the necessity for exhaustive tapping or exploratory incision, either of which is fraught with a certain amount of danger to life. A reference to the foregoing catalogue of possible sources of error will show the numerous instances in which it is of service.

TAPPING.

By this we mean the removal of the whole, or as much as possible, of the fluid contained in the cavity which is tapped. It may be performed either for diagnosis, or in the hope of cure, or as a palliative remedy. It cannot possibly be said to be an operation without danger, but I think the danger has been somewhat exaggerated, and it certainly can be minimised by antiseptic precautions. The one unavoidable danger is that of perforating a vessel in the walls or substance of the tumour, and so giving rise to serious internal hæmorrhage. By using an instrument with a very sharp point and not too sharp edges, and by introducing it slowly, this danger can be minimised, although not entirely obviated. It must serve as a warning against unnecessary tapping.

For purely diagnostic purposes, the use of tapping might be much limited. Mere exploration will, in all probability, suffice, and if this be employed in the first instance, it may help to diminish the danger of any subsequent tapping, by showing that a very small trocar will suffice, owing to the thinness and fluidity of the tumour's contents. If exploration has given sufficient positive or negative evidence to complete our diagnosis satisfactorily, tapping for further diagnostic purposes only should certainly be avoided. Of late years certain operators Lawson Tait, Bantock, and others have almost entirely discarded tapping for diagnostic purposes, and prefer to rely on an abdominal incision, all being in readiness to proceed with ovariectomy if that should prove to be feasible. I doubt not that with care, and with very careful dissection, an abdominal incision of 2 or 3 inches may be made with almost as great safety as tapping, and that much more exact information is thus obtained, but the profession is not entirely composed of skilled ovariectomists, and it is not every practitioner who is prepared to meet even the difficulties which may arise from an adherent peritoneum, or to fulfil the other operative conditions which an incision may involve. Diseased kidneys, hydatid masses, and other unsuspected abnormalities have been safely removed in this way, but only by experts. A scratch upon the exposed surface of such a mass may leave no option.

When fluid, which may be ascitic, or renal, or ovarian, or of other kinds, is tapped for the purpose of diagnosis, it should be done by a trocar of not more than No. 2 catheter size. If a pointed tube be used, its point should be capable of being withdrawn into the tube. Either

instrument should be furnished with a stop-cock. The abdominal surface should be antiseptically washed, and the instrument should be thoroughly soaked in strong antiseptic solution. If dulness extends well across the middle line, the linea alba should be punctured, if not, the most central spot of the dulness should be chosen, avoiding any evident abdominal vessels. If the fluid is so viscid that it cannot escape at all through such a tube, the tapping must be abandoned after aspirating, if possible, a few drops. If it runs, but with difficulty, the aspirator (fig. 32) must be employed; if it runs freely, an india-rubber tube should be attached to the instrument, and the fluid should be allowed slowly to descend by syphon action into a vessel below the level of the bed. Above all things, air must not be allowed to enter the abdominal cavity.

As a means of cure, tapping can never be supposed for a moment to succeed in the case of distinctly multilocular cysts. This is admitted on all hands. The frequent tapping of such a tumour by a large trocar belongs to a past age, and is a cruel proceeding when done, as it yet too frequently is, by a practitioner who simply acknowledges thereby his inability to remove it and his unwillingness to ask any one else to do so. How far tapping may be successful in a unilocular cyst, or in one which is almost unilocular, is a matter about which there is a strange difference of opinion among those best able to judge. Some tell us that such cysts invariably refill if they are long enough under observation, admitting however, the possibility of several years of perfect comfort and quiescence. Others admit that cysts of the broad ligament may be so cured, but not ovarian cysts. Others, again, will not admit this even with regard to the former. But any apparently unilocular cyst may be a cyst of the broad ligament, our powers of differentiation being limited. Therefore, even if we admit that it is only such cysts which are thus ever curable, we have not here a positive contra-indication in cysts of doubtful origin. Twice I have removed the fluid from such cysts. With the general characters of ovarian fluid, the patients remaining perfectly well, and continuing so during the two or three years that they were under observation, while I feel certain that a return would have brought them back to me. In one case, also, I tapped a cyst which from its contents was probably parovarian. After a large quantity of fluid had passed the flow ceased, but there still remained a tolerably large cyst. A week afterwards there was no evidence of cyst, but clear signs of intra-peritoneal fluid were present. This in its turn disappeared, leaving no trace of any disease. The patient remained well for many months, until I lost sight of her. The cannula had evidently slipped out of the cyst, and the contents, aseptic of course, had escaped into and been absorbed by the peritoneum without febrile symptoms. I cannot therefore recommend the entire abandonment of tapping as a possibly curative remedy

in such cases as I have named. It is all very well for the surgeon who is accustomed to such matters to talk glibly about the splendid statistics of ovariectomy, the only other resource; but I fear that most of us fail to recognise the prolonged mental agony of many a patient who is preparing for a major surgical operation, an agony little short of that of a condemned criminal. Yet this ought to be taken into account when rejecting the alternative of tapping in such cases, for no amount of word painting, or of statistical references, will ever persuade patients to look upon the two operations with the same equanimity. I think that when the tumour evidently contains thin watery fluid, and when there is no evidence of more than one cyst, the comparative risk, and the faint possibilities of cure, or the probabilities of prolonged alleviation, should be honourably placed before her, together with the "pros and cons" in favour of ovariectomy, and that she should have the option. In such a case I myself would select to take my chance of one tapping. Much discussion has recently taken place as to the relative danger of ovariectomies when tapping has previously been performed, and when it has not. I can only give the result which a careful consideration of the views of the contending parties has had on my own mind. It has certainly removed the impression which, following Wells, I formerly held, that one or more previous tapplings are a positive advantage, rendering the system, and especially the peritoneum, more tolerant of subsequent ovariectomy, without overbalancing risks. But it has not convinced me that, in such cases as we have defined, tapping is not a fairly justifiable and even rational attempt at permanent cure or prolonged removal of the disease. The subject is most ably discussed, although with a different conclusion, by Bantock (*A Plea for Early Ovariectomy*, London, 1881).

Having limited tapping, as a curative means, to such cases, it is not necessary to give instructions as to the dangerous procedure of tapping secondary cysts through that first opened. It is infinitely safer to leave them alone and reserve the case for ovariectomy. The best position for tapping is with the dorsal decubitus. The bladder must be carefully emptied beforehand. Only when a very large trocar is used, and that should rarely (if ever) be the case, is it necessary to make a preliminary incision through the skin and subjacent fat. So far, tapping by the abdomen alone has been considered. Tapping through the vaginal walls is a far more hazardous proceeding. There is much greater danger of the entry of air and septic material, and consequently of septicæmia. If the tumour turn out to be multilocular we almost invariably perforate its densest portion; the difficulty is much greater, and the intestines are more apt to be wounded. It should be reserved for the case of a small intra-pelvic cyst which, for some reason, has become intolerable, the true nature of which is perhaps not so clearly diagnosable as to

warrant abdominal section, or which is opposing the progress of labour.

Tapping as a mere palliative may be employed under the following circumstances:—

1. The season of the year, or various social circumstances, may render the inevitable ovariectomy inexpedient at the moment, and temporary relief may be absolutely necessary. In such cases one or even two large cysts may be carefully emptied by separate tapplings.

2. Pregnancy may coexist, in which case we have a choice of courses—the induction of abortion or premature labour, ovariectomy regardless of the pregnancy, tapping, or waiting to the full term. The size, consistency, or rapidity of growth of the tumour, or the urgency of the pressure symptoms will decide the question. In a multipara, or a patient in whom there is nothing to indicate a probably severe labour, the last course seems the most advisable in the case of an ordinary slow-growing cystoma. I had a patient who had two fine children between the times of diagnosis and successful ovariectomy. But if the suffering be great towards the latter half of pregnancy, and if a large cyst can be clearly diagnosed, its contents, previously ascertained by exploration to be moderately thin, may be evacuated by tapping, and that even more than once. Between the induction of premature labour and immediate ovariectomy there is a very decided choice of evils. If pregnancy coexist with a growing multilocular cystoma, and the viable period be reached, I should have no hesitation in recommending the former course, and even if the pregnancy is at an earlier date, my experience of the comparative safety of skilfully managed induced labour would lead me rather to side on this point with the obstetrician Barnes than with the ovariectomist Wells, and to run the risk of, first an induced labour, and subsequently an ovariectomy, rather than that of, first an ovariectomy, and subsequently a labour, either as an immediate consequence, or with scarcely repaired abdominal structures.

3. The tumour, although undoubtedly ovarian, may present such characters of malignancy or adhesion as to forbid ovariectomy or any attempt thereat, and temporary relief may be gained by tapping. Few such cases occur now-a-days. A bold and experienced ovariectomist, knowing the fate of his patient otherwise, will seldom be deterred by unseen though probable adhesions, unless influenced by the unworthy motive of accumulating favourable statistics. In the infancy of the operation, when its adoption trembled in the balance, this motive had its legitimate place, but now-a-days the medical public estimates more highly an operator who will not decline the most unfavourable case, if there is a chance of saving an otherwise lost life, than one who has a long list of carefully selected cases and therefore of successful results. Even to the most selfish

statistic maker there is always the resource of separately classifying his "uncompleted operations" or exploratory incisions.

The following up of tapping by the injection of iodine, as in hydrocele, is now, I think, a thing of the past. I saw two or three such cases under Simpson (1855 to 1857), but the results were such as to lead me to do as is done by most recent writers, and ignore the procedure entirely.

DRAINAGE.

I do not think that any one is now found to advocate the treatment, in the first instance, of a supposed ovarian cystoma, whether unilocular or multilocular, by the insertion of a drainage tube of any kind, after tapping. Whether this is done *per vaginam* or *per abdominem*, it involves many months of suppurative discharge, and of corresponding septic risks, and is not to be compared with ovariectomy as a safe proceeding, while successful cure thus is exceedingly exceptional. It should therefore be reserved for those cases where ovariectomy has been attempted, and where, owing to the adhesions met with, the removal of the tumour has been found to be impossible. When this is the case, and when the tumour has not been too much broken up before the impossibility of removal is discovered, our only resource is to fix together the margins of the opening in the tumour and those of the abdominal wound, including both layers of peritoneum and the skin in the suture, and to insert a drainage tube as far as possible into the substance of the tumour. I have met with two such cases, and both recovered entirely, after a prolonged period of hectic and purulent discharge.

Ovariectomy.

The operation which is now universally recognised under this term is of such importance that it will require us to go somewhat more into detail than with some other important gynecological operations. Let the young surgeon, however, who is tempted, as so many now are, to try his hand at an apparently favourable case, remember that removal of an ovarian tumour resembles much its diagnosis, as regards facility of performance. In some cases it would be almost disgraceful to fail, but few cases are exempt from difficulties which can only be overcome by the largest experience, if at all. The second operation I performed seemed to be a typically simple and straightforward one, yet the patient died on the table, from venous hemorrhage in the pelvis, the result, not of adhesions, but of a morbid softness and friability of every structure concerned. Had it been my first, I do not think I should ever have tried

again. First performed successfully in 1869 by Ephraim McDowell of Kentucky, who had imbibed his ideas partly from the teaching of John Bell of Edinburgh, ovariectomy has been gradually improved by successive operators, until it would now be, in skilled hands, among the safest of all capital operations, if we could only assure ourselves of certainty in diagnosis. The history of the subject is given in every special monograph, and I shall not enter upon it further than by pointing to Sir Spencer Wells as undoubtedly the leading introducer of the operation into general notice, its consistent advocate, and its foremost improver (see an interesting address by him, reported in the *Lancet* and *Brit. Med. Jour.*, Nov. 1884). It would be invidious to attempt to introduce other names, although perhaps few would deny to Charles Clay of Manchester and Thomas Keith of Edinburgh the right to exceptional mention.

Probably the most satisfactory plan will be to describe the operation under ordinary and favourable circumstances, and then afterwards, under separate headings, to refer to exceptionally difficult or debatable points. No reference is here made to operations through the vagina, nor to excision of the ovaries for other purposes than the removal of a very distinct tumour. I am supposing a case in private rather than in hospital practice. The general health of the patient having been looked to as far as possible, and great attention having been paid to all preparatory arrangements (*vide* Chap. III.), an experienced nurse will be placed in charge of her at least two days before the operation. It will be her duty

1. To see that the patient's food the day before is light and nourishing, and that her breakfast on the morning of operation consists only of a little good beef-tea, or cocoa and toast. This should be three or four hours before the operation.

2. She must administer an enema in the morning, and, if the patient is fairly strong, a mild aperient, early the day before.

3. She must provide unlimited supplies of hot and cold water, and of 1 in 20 and 1 in 40 carbolic acid solution.

4. She must see that the patient is clad in a warm flannel undergarment, long woollen stockings, her ordinary night dress being slit down the front, above which she may wear a loose woollen jacket.

5. She must have the chamber at a temperature of 66° to 68°, but not higher, as used to be prescribed.

6. She should shave the upper part of the pubes if the hair approaches the line of incision.

7. She must use the catheter not more than half an hour before operation.

8. She must have charge of the sponges, a dozen at least, of various sizes, all new, and all carefully bleached with dilute hydrochloric acid,

washed free of any particles of sand, and well carbolised. She should be responsible for recounting them and reporting to the operator before the stitching is completed.

9. She should take the evening and morning temperatures before operation, and subsequently as ordered.

The room should be thoroughly disinfected, as much as if it had recently contained a case of zymotic disease. Its furniture should be of the simplest description, consisting of—

1. Two iron bedsteads and fittings. One of them is better not introduced until the third or fourth day, or for a week, at least, if two nurses are available.

2. One arm-chair.

3. A common strong dressing table, 30 to 32 inches high, for the operation, another for the sponges, basins, solutions, lint, strapping, &c., and a smaller one for the operator's instruments.

4. A large slop pail, a few basins, a thermometer, and a good many towels. A piece of old drugget or some sawdust should be temporarily placed under the operating-table. An adjoining dressing-room, cleared out for the use of the nurse, is an advantage.

Operation in a common surgical theatre is denounced by almost every writer on the subject. No doubt, the now almost universal prevalence of antiseptic surgery diminishes the risk, and in almost every general hospital there are some surgeons who, from conviction or from carelessness, do not obey the rule.

The operating table is placed with its foot near the window, and as the operator stands at the centre of its right side, to the right of the patient, his small table of instruments is placed to his right, and the sponge table well behind him and to his left, the nurse being in charge of it. No one else should interfere with either, unless by request.

Anæsthesia is now proceeded with, the administrator standing at the head of the couch, and devoting his sole attention to his duties. One other assistant stands opposite to the operator, and he should be specially acquainted with the steps of the operation, but should only sponge, twist vessels, or otherwise interfere, as the operator may direct. On this detail different operators will vary in opinion. Another assistant to the operator's left is useful, especially if the case prove a difficult one. He should be intently on the watch for orders, but do nothing without. If the spray is used, the apparatus must be placed to the left of the first assistant, and the spray must be thrown well across the wound diagonally, not blown into the operator's face, nor directly into the wound.

Any other authorised bystanders than the one who manages the spray should stand well behind the first assistant, and will see better and be less obstructive if furnished with a form to stand upon. Any extra

nurses or probationers should remain beside the head nurse, and one of these may profitably devote herself entirely to washing the sponges.

Anæsthesia is carried to its fullest degree, and in hospital practice this may be done in the general ward, the patient being afterwards wheeled in on a high couch, which is immediately removed. A folded blanket and waterproof are placed below her, another blanket over her lower extremities. The night dress is now folded aside so as to expose the abdomen. Any brief final clinical observations now being made, the abdomen is well washed with antiseptic solution, especially the umbilicus and the apron is placed *in situ*. This is a sheet of thin waterproof



FIG. 189. Stanley's Director

ing, in which an orifice, exposing the necessary surface only, is made. 8 or 10 inches long, and 3 or 4 wide, according to the size and solidity of the tumour, or the obesity of the patient. The edges of the opening are smeared underneath with adhesive plaster, and the folds should descend on each side, well below the level of the table, up to the breast, and down to the knees. It is important that the adhesive material should be of good quality.

For the *abdominal incision* we require two or three scalpels, a pair of dissecting forceps, a flat director, grooved not quite to the point (fig. 189).



FIG. 190.—Wells's Torsion Forceps.

half a dozen, at least, of Wells's torsion forceps (fig. 190), counted before and after the operation, and some carbolic glycerine (1 in 8). The last is occasionally applied with the tip of the finger, and serves as a hæmostatic and an antiseptic agent. The torsion forceps are fixed on to any bleeding point, and left dependent until the peritoneum is reached. They may then be used, if necessary, as common artery torsion forceps, or they may be removed at an earlier stage if the number is proving deficient. Their temporary hold usually suffices to ensure the permanent arrest of bleeding.

The abdominal incision, unless under very exceptional circumstances,

is made along the linea alba, so as to pass between the recti muscles, but no great necessity exists for avoiding the edge of one of these, if it is stretched over the middle line. The skin, subcutaneous areolar tissue, and fat, the thick aponeurosis of the muscles, the transversalis fascia, and the layer of granular sub-peritoneal fat, are successively and slowly divided by careful sweeps of the knife, but there are great varieties in these structures, and the operator should not lose his head if his anatomy occasionally fails him for the moment. The recognition of the peritoneum when arrived at is the important point. I have seen it stripped from the abdominal wall to a terrible extent, by an otherwise expert surgeon, under the impression that it was the wall of the tumour; but no one who has seen the bluish-white, glistening wall of an ovarian tumour should mistake it for the dull, dark blue of the outside of the peritoneum. As a rule, the motion of the tumour on respiration can be seen below, and the presence of a little intra-peritoneal fluid may cause the thin membrane to bulge outwards. It must be carefully raised with the point of the dissecting forceps, cut across, and divided lengthways on the director. Feeling sure that the peritoneum is reached, or that it has been punctured, the rest of the wound should be dissected down to the same level; every bleeding point should be twisted, the pendent torsion forceps removed, and the wound well carbolised again. The peritoneal opening is then enlarged sufficiently to admit the finger, which guides the blunt-pointed director along its internal wall, so as to allow of a free opening along the whole length of the wound. The incision should terminate below, about 2 inches from the pubic symphysis, thus avoiding the peritoneal reflexion to the bladder. Its length upwards from that point should be at least 3 inches, even when the tumour is known to be very fluid, or when doubts exist as to the diagnosis, and when the operation may be considered as exploratory or diagnostic. When the tumour is semi-solid, the incision should be made 6 inches long at least, and this length may have to be considerably increased. On this point there will be further room for discussion. The incision being now completed, the next point should be *the completion of the diagnosis*. The diagnosis should, moreover, now include not only the fact that we have an ovarian tumour to deal with, but a considerable knowledge of its attachments and adhesions. For this purpose a clean metallic bougie or sound may be passed over the surface of the tumour in all directions where it will go without obstacle, but the forefinger is the best of all sounds. With this the operator can generally reach down in front to the lower end of the globular mass, and can even ascertain something of its attachments or pedicle, and feel the uterus and trace its fundus. Any slight adhesions to the abdominal walls or omentum, which are

felt as thread-like bands, are easily torn off the tumour at this time, two, three, or more fingers being used if necessary, but those which are firm and unyielding should be left until the cyst is partially drawn out from the abdomen.

The next step is *lessening the bulk of the tumour by tapping*. A trocar, as large in calibre as a No. 12 catheter, and at least 6 inches long, may be used for this purpose. Others of a more complicated character will be described further on. It is plunged into what appears to be the most fluid portion of the tumour, and before the trocar is removed a basin is placed under the cannula, others being at hand, to be exchanged rapidly when full; or, if the fluid runs freely, it may at once be conveyed to the pail by a piece of tubing furnished with a nozzle which slips easily into the cannula. The pressure of the abdominal walls is at first sufficient, but is afterwards aided by the second assistant, who will, taking care not to impede the operator, place a hand on each side of the abdomen, and gently but steadily bear up the tumour towards the wound. This also tends to prevent any of the fluid escaping into the abdominal cavity, a thing to be entirely avoided if possible, although it is astonishing how little effect it may have on recovery. I have seen the whole pelvis and lower abdomen thickly coated with grumous, gluey material, which sponging quite failed to remove, and yet with scarcely any rise in temperature after the operation. Still the risk of septicæmia must be increased. As the cyst gradually collapses it is drawn well on to the trocar and slowly extracted by the operator. If the first cyst is not large, other cysts will have to be tapped; and as we can now clearly see what is being done, this may be accomplished through the intervening septa. Some slight difference, often a very great one, in the character of the fluid, will show what has been done. Often, and especially if the size and shape of the whole mass are not clearly known, it is better to tap fresh cysts from without as they appear at the wound. Two or three trocars should therefore be at hand.

The *withdrawal of the tumour* now continues. The operator may, in a simple case, have sufficient purchase to draw forth the whole mass slowly and without force, through a very small opening. This is much facilitated, however, by seizing a good-sized flaccid portion with a Nelaton's forceps (fig. 191), although it is wiser not to take hold solely by it, but to include some more of the tumour in the grasp of the fingers. With his left hand the operator from time to time explores the surface of the tumour to mark his progress, and to assist, by a sort of shelling out, the expulsion of tense minor cysts from within the abdomen, while in the interval of such manipulations the first assistant closes the upper portion of the wound by pinching its edges together, and prevents the escape of intestines or omentum. All this applies to cases where there are very distinct cysts with perfectly fluid contents.

but where the tumour is one dense mass of septa, with only minute cysts, or large ones containing glaucous matter, tapping does not avail. There is nothing for it then but to enlarge the opening in the tumour sufficiently to allow the insinuation of the hand into its interior, and so to remove handful after handful of the contents, a process by no means pleasant-looking to the uninitiated. In such cases, also, it will sometimes be necessary, in order to avoid undue dragging on the external wound, to enlarge it up to or beyond the umbilicus, passing to one side of this. The operator must look inside and ascertain that there is no intestine adherent to the abdominal wall, which he lifts on his fingers while he divides it.

While the cyst is being withdrawn, *firmer adhesions must be dealt with* if they exist, and as they gradually come into prominence. Even tolerably stout and firm ones will often yield at the point of attachment to the tumour, if peeled carefully downwards by the finger, but such must be carefully examined before they are allowed to disappear in the abdomen, and if they bleed, must be either touched with the



FIG. 191. Nolton's Tumour Forceps.

cautery, or, still better, tied with a firm silk or gut ligature, the ends being cut short. A few of these ligatures, more or less, seem to make no difference to the recovery, and all adhesions of omentum or bands of lymph, which are really vascular and strong, are better tied at once and then divided a little beyond the ligature. Loose adhesions to bowel or solid viscera are more serious matters. If careful digital separation is possible, it is the most satisfactory, any raw surface left on the viscus being touched with strong solution of perchloride of iron. If the scalpel or even its handle is required, it is better to leave a thin section of the tumour-wall than to risk injuring the viscera, and the cautery, Paquelin's being the preferable one, may be required also. Posterior adhesions, and those deep in the pelvis, are only discovered towards the close, and require the utmost caution. They are dealt with on the same principles, and in order to see them clearly, the first assistant must keep the intestines from rolling downwards by means of a flat sponge, or small pieces of linen well soaked in antiseptic solution. One or two clean, bright copper spatulae occupy less room than his hands.

The tumour having been freed from adhesions, and lifted outside the wound, will remain attached by its pedicle. The second assistant should hold it up in such a way as to make no traction on this, and yet to make it sufficiently tight to allow the operator to examine and treat it.

The Treatment of the Pedicle.—The history of the treatment of the pedicle is almost the history of ovariectomy, and as it cannot be said that any one plan is yet universally adopted, or is suitable for every case, I shall afterwards shortly refer to others than that which I almost always adopt, and which is described here. If the pedicle is anything like the ordinary length or thickness, the operator seizes it with his left forefinger and thumb, and compresses it so as to ascertain that he has held of a thin portion, free from any thick vascular or ligamentous bands. If it be long enough he can also ascertain this by sight. In his right hand he holds a long blunt needle (fig. 192), through the eyelets of which is passed a long ligature of the stoutest possible pure silk, well carbolsed, the silk forming a loop between the two eyelets. Guided by the left hand, he pushes this through the central thin portion of the pedicle. In the case of a very short pedicle, a curved needle



FIG. 192. Wells's Blunt Pedicle Needle.

is advisable, and it will serve equally well for a long one. The centre of the ligature is thus pushed through, seized, and held, while the needle is withdrawn. The ligature is then cut across, and we have thus two ligatures, side by side, and projecting at least 6 or 8 inches on each side of the pedicle. The two halves are now tied as firmly as possible, tying the two portions of the pedicle, previously crossing one ligature once over the other, to ensure the union of the two knots. It is a safe precaution, although seldom quite necessary, to tie another single ligature round the whole pedicle, on the proximal side of the double one. The dependent ends are held up out of the way and the pedicle is cut across with scissors, at least half an inch on the distal side of the knots. The tumour is removed and the pedicle is sponged, carefully inspected, and then smeared with carbolic glycerine. With a true ovarian tumour the greater part of the Fallopian tube will be removed with the tumour. A careful examination of the other ovary is now made, and if it is found to be diseased, it is ligatured and removed in a similar way.

Next comes the *clef of the pelvis and abdomen*, together with a careful search for any bleeding points left by torn adhesions. If the cyst has been almost or quite unilocular, has been shelled out through a small

opening, with scarcely any adhesion, and with little or no exposure of the intestines, it will suffice to use a succession of small sponges carried by a secure sponge holder into the more dependent parts of the pelvis, especially Douglas's pouch, until they return almost pure and dry. But if the contrary condition has been the case, it is better to carefully inspect the cavity wherever bleeding adhesions are possible, to tie or cauterise them if there are any, and not to close the wound until the absence of hæmorrhage or of its products in the pelvis can be positively affirmed. The intestines are meanwhile carefully repressed by the first assistant. The pedicle is now examined again, the ends of its ligatures are cut off, half an inch from its surface, and it is dropped into its normal site. A flat sponge, the full length of the incision, is now laid over the intestinal contents and allowed to remain until the external sutures are placed but not tightened; it is then carefully withdrawn between two of them, and the sponges are finally counted. It is well also at this time to make sure that all the smaller instruments used are safe.

For the *sutures* I greatly prefer silver, although some operators, Wells among the number, still use silk. They may be inserted in various ways, according to the fancy of the operator, but I think that accuracy is secured better and more easily by the straight perineal suture needle (fig. 42). The most important point is to secure coaptation of the peritoneal edges. The needle is plunged into the skin about a third of an inch from its edge, made to emerge a little further from the cut edge of the peritoneum, then passed similarly upwards on the opposite side. The operator or his assistant threads the point with a piece of wire, 8 inches long or thereabouts, which is rapidly and easily drawn back; the two extreme ends are loosely twisted together and the process is repeated until the whole wound is sutured, at intervals of about half an inch. After removal of the sponge as above mentioned, the raw edges are once more smeared lightly with carbolic glycerine, and the sutures are twisted and cut short, as in other suturing with silver wire. As each is drawn tight, not too tight, the wound is lifted up by it, and, with a probe or director, the absence of intestines or omentum is well assured, the peritoneal edges are pressed into the wound, and the edges of skin are placed in apposition but not inverted.

In *dressing the wound* the whole Listerian system may be used, but I have long adopted a somewhat more simple plan, although equally based on antiseptic principles, and have been thoroughly satisfied with it. The suture ends being laid flat, I lay upon the wound a piece of lint at least an inch longer. This is previously completely saturated with carbolic glycerine, and is several plies thick. Several more plies, of larger size, are placed above this and covered by a still larger piece of waterproof cloth. Then four or five broad

straps of plaster cover the abdomen from side to side and entirely exclude the air from the dressings. If necessitated by great shrinking of the abdomen, a thick layer of antiseptic cotton is placed above this, and then an ordinary obstetric binder, or a many-tailed one, of flannel, is applied. This dressing may be safely left untouched, except the binder, for ten days, unless some unfortunate circumstance, such as great rise in temperature, arise, necessitating an examination of, or interference with, the wound. This will have healed entirely by first intention, any little clots about the ligatures will be absolutely aseptic, and on removing the stitches the same dressing is quickly reapplied.

A certain amount of shock immediately follows the operation in most instances, temperature falling to 97, 96, or lower, but this slowly passes off if the patient is covered with warm blankets, and hot bottles or tins are applied to the feet, limbs, and body. This should be done in every case until the temperature rises above the normal. The after-treatment consists in the regular use of the catheter, and occasional subcutaneous injections of morphia, to produce rest and lock the bowels. The food for a day or two should be almost *nil*, a few teaspoonfuls of iced milk or Brand's essence of beef are sufficient at first, and after a day or two a larger amount of light nourishing slops is gradually allowed. Stimulants are seldom required, unless the first shock is of considerable duration or great extent, when the subcutaneous injection of 20 minims of sulphuric ether will be found very effective. The bowels are kept locked for at least a week or ten days, and then very carefully relieved by an injection of olive oil. Sickness coming on immediately after operation, and continuing at intervals for a day or two, has not the same evil import as the same symptom occurring after the first or second day. Ice, iced soda water, or a little champagne, may be given with advantage, and I have seen, where these had failed, a small cup of hot tea arrest it at once. The temperature and pulse must be carefully watched, and any sudden and great rise, with or without rigor, will excite suspicions of septic changes in the intra-abdominal serous fluid, to be met by the use of the ice bag to head or limbs and by full doses of quinine. In marked and severe septic inflammation of this kind, immediate relief has been given by opening the wound at its lower end or by tapping Douglas's pouch through the vagina, but the use of a drainage tube will obviate the necessity for this serious proceeding. Its advantages will be discussed later on.

After this sketch of the operation, it remains to mention certain points wherein practice varies, different methods or means are employed, or the circumstances of the case vary from those commonly met with.

The Use of the Spritz.—I have no intention of reintroducing here the question of Listerism or antiseptic surgery. I firmly believe in its

principles and adopt its practice, as is everywhere apparent. But many who do this have come to the conclusion that the use of the spray has certain disadvantages in ovariectomy. They allege that subsequent hyperpyrexia is often due to the large amount of carbolic acid introduced into the abdomen, and that dangerous cooling of the intestines and peritoneum during the operation is apt to be caused by the condensed steam. My experience as to the hyperpyrexia has been exactly the opposite of this, and the cooling can be greatly prevented by having the apparatus not too far off, and by directing the steam across, not into, the wound. I cannot feel justified, therefore, in refusing to a patient, in hospital practice at any rate, this means of driving off or neutralising any vitiation of the atmosphere. On the other hand, in home practice, and with every precaution described above, I feel that the necessity for the spray is minimised, and its slight disadvantages are less counterbalanced by gains. With plenty of intelligent assistance, however, I cannot see that it is contra-indicated in any way.

Anæsthesia.—Setting aside the discussion whether, on general principles, we should abandon chloroform and return to ether,—and I have not seen it necessary to do so, except in particular individuals,—I believe that Sir Spencer Wells is right in considering that bichloride of methylene, given with Junker's apparatus, is the most suitable anæsthetic for ovariectomy. I have seen it followed by severe sickness, but it is less often so than chloroform. The anæsthesia should be deep at first, and afterwards skilfully kept up just to the verge of apparent insensibility to pain, and it may be pushed a little deeper just before the insertion of the superficial stitches (see p. 53).

The Abdominal Incision.—Much discussion took place at one time as to the relative mortality of long and of short incisions. I think all are agreed now that any proved difference depends, not so much upon the size of the incision, as upon the relatively larger, more solid, or more adherent tumours for which the larger incisions are required. Rather than exercise any forcible traction through the wound, or treat strong adhesions in the dark, it is advisable to enlarge the incision, even to the length of 10 or 12 inches. It is well to enter the peritoneum at first about the centre of the incision. The finger can then be inserted downwards, and might thus detect a source of danger which has lately been noticed in one or two instances, viz., the adhesion of the bladder to the front of the tumour. When there is great difficulty in separating peritoneum and tumour in front, owing to adhesions, it is better to dissect upwards outside the peritoneum until a point is reached where it can be lifted by the forceps from the subjacent mass.

Tapping the Cyst.—I have described only a simple trocar for this purpose, because I believe that, used with neatness and practice, it can

perform the work with perfect efficiency. A much larger one than No. 12 catheter is not of much service. Fluids that will not flow through it will hardly be persuaded to do so through a larger instrument. But the instrument of Wells (fig. 193), and there are several slight modifications of it, is very cleanly. Its point is withdrawn by a not very elaborate mechanism, and by its spring hooklets it can soon be securely attached to the flaccid cyst wall. An inexperienced operator is apt, however, to tear a thin cyst by very slight traction on the inviting



FIG. 193. Wells Trocar (4)

hold of it he has thus obtained. A piston trocar, such as that originally used by Wells (fig. 194), and furnished with a rubber tube, avoids the necessity for changing vessels, and, on the

whole, I prefer it. Either of these instruments conveys the fluid directly into the large pail which stands below the table.

The Pedicle. There has been more variation in the treatment of the pedicle than in most other respects. Most of the earlier cases were treated as a ligatured vessel then was. A strong ligature, often of whip-cord, was tied around it; the tumour was cut off, and the ends of the ligature were left hanging out of the wound. It is astonishing what success was obtained, in spite of this septic communication with the outer world, and of the secondary hæmorrhage which its removal or attempted removal



FIG. 194. Piston Trocar.

occasionally involved. The extra-peritoneal treatment was an enormous advance on this. The pedicle was brought to the opening of the wound and transixed, or otherwise secured outside, while the wound was tightly closed around it, and antisepticity of the projecting portion was secured by tanning it with perchloride of iron. Wells's clamp (fig. 195), with minor modifications by others, was the perfection of an instrument for this purpose. The removable handles powerfully compressed the clamp, which was then secured in position by the screw. After a certain time separation took place, and the clamp was removed, leaving an extra

abdominal cicatrix, which generally healed speedily. But the extra-abdominal clamp has in turn yielded to improved intra-abdominal methods of treatment. It slipped occasionally, some time after the operation; it was apt to make serious traction on the pelvic organs, it gave rise to adhesions which impeded the uterine functions, to hernia through the abdominal walls, to ulceration of formidable extent, to excessive vomiting after operation, and it opened a door, although a less wide one than formerly, to septic poisoning from without. Of course, these untoward results occurred only occasionally, but they did occur; and the tendency to each of them was diminished, if not abrogated, by the use of the short-cut ligature left entirely within the abdomen. It was soon found that pure silk ligatures thus used gave rise to little or no further trouble, that proper application prevented all fear of their

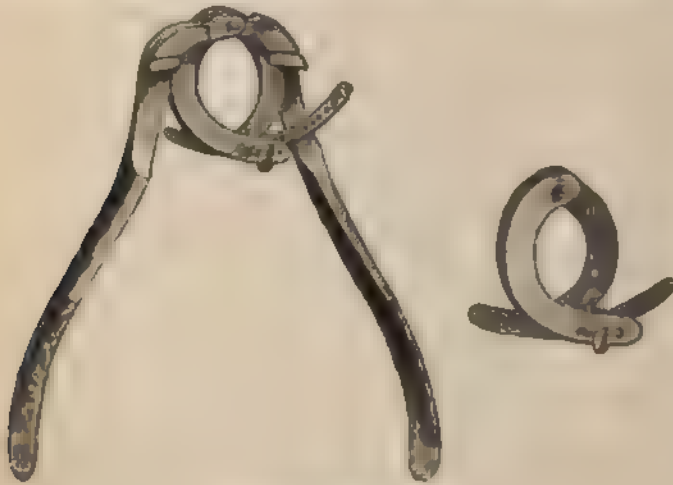


FIG. 125. Wells's Clamp.

slipping, and that there was sufficient minor circulation left in the stump to prevent its acting as a foreign body or a slough. Granulations freely sprout through the meshes of the silk, and in time it becomes disintegrated and lost, I will not say absorbed. The greatest difficulty lay with short and very broad pedicles, but these also were difficult or impossible to treat with the clamp. They can be tied in more than two portions. The causer or the actual canter may also be considered as a fairly safe means of dividing the pedicle, which is then left free within the abdominal cavity, but much as I value these instruments for the treatment of many affections, safe as I consider them for the bloodless division of many structures, and much as I admire the wonderfully good results of Baker Brown and Keith, I confess that I dare not trust to these alone where failure is so irretrievable, and when

we have such an efficient means of treatment as the intra-abdominal short-cut silk ligature. There is one other method of treating the pedicle to which we may have recourse, when, to use a Hibernicism, there is not one. If the tumour is found to be firmly imbedded in the broad ligament, and with nothing that is capable of being ligatured, it may be enucleated; that is to say, we may separate the peritoneal covering which exists at its lower end, and scrape or tear out the tumour from within it. Great patience and watchfulness as to bleeding points are required; and when the tumour is thus finally enucleated, the cut or torn peritoneal edges thus left should be turned inwards upon themselves, and united by gut sutures. I have only had one experience of the kind, and desisted early from the attempt at enucleation, treating the case successfully by stitching the edges of the

lower part of the cyst to the abdominal wall, and completing the cure by antiseptic drainage. I may quote the words of Lawson Tait:—"I have three times employed this method (enucleation) with eminently satisfactory results; but I am bound to say that, without a good deal of experience in the separation of adhesions, I would have stopped in the middle of the process and left it incomplete, on account of its difficulties."



FIG. 196.—Keith's
Glass Drainage
Tube.

Drainage of the Peritoneum.—Marion Sims especially, but not alone, has shown that death occurs in the majority of abdominal wounds or operations, from the septic effects of sero-sanguineous fluid in the lower part of the peritoneum, and that if this can be washed out or otherwise removed, recovery is possible, even in the most serious cases. Twice I saved cases, evidently moribund, by aspirating Douglas's pouch, and so removing the source of danger. But this is but a clumsy

and hazardous proceeding. We ought to be able to suck up any such fluids through the abdominal incision, and this is provided for if we insert a drainage tube into the lower angle, and leave it protruding through the abdominal opening, well guarded antiseptically. If we use a glass tube (fig. 196), as recommended by Keith, we may thus pump out with a fine syringe, whenever there is a rise of temperature, every drop of fluid from the peritoneum, or even wash it out with antiseptic fluids. The idea is charming, and we thus render the *penetratio* of the pelvis almost as open to treatment as the surface of an external wound. But we thereby run some risks. In the great majority of our cases we have no such septic poisoning, and we certainly make an opening for it in the hands of a careless or sleepy nurse or assistant. We greatly reduce the advantages of the intra-peritoneal treatment of the pedicle.

I stoutly held out against this drainage plan until I lost two consecutive cases of very simple operations on fine healthy young women. Then I adopted it. In the first case we pumped out quantities of sero-sanguineous fluid twice a day, but we could not get a rise in temperature or a single bad symptom to justify us in doing so. In the next case I put an india-rubber cork in the tube, and left it alone till the end of five days, when I took it out with every antiseptic precaution. Then the temperature rose to 105, and I wished I had left it longer, or not meddled with it for a longer period, but the patient did well. I treated four cases subsequently with the well-corked tube, and those in a general hospital when erysipelas was somewhat rife. The taking of it out involved in each case a slight rise of temperature, but not more than the removal of the stitches or the first opening of the bowels often does. I took care to leave all fluids behind, and not to remove the cork before the tube. The result of all this is to convince me that if the operation has been done antiseptically, in a healthy surrounding, and with the fair certainty of a-septic accompaniments, we run less risk by omitting the drainage tube. If these conditions are evidently absent, the operation should not be done at all, but if there is a doubt on the point, as there must often be in hospital practice, it is better to use the drainage tube, to cork it up well, and, if all goes well, to get rid of it within five or six days, as carefully as possible. In one of the cases above referred to, a wide sinus was left for nearly three weeks, the depth or dimensions of which I never cared to inquire into too minutely.

I think I shall use the well-corked tube in any future hospital cases, or when I know that the peritoneum cannot be thoroughly cleansed, and do without it in all others. In the case of the spray, one makes this rule of thumb sort of distinction for less valid reasons, but in the case of the drainage tube we have to some extent to make a choice of evils, and the relative proportions of these may depend on the surrounding circumstances. It is necessary to make very sure that the tube is secured so firmly that it cannot slip; and I have found a thick india-rubber one (fig. 197), with a phlange like that of a tracheotomy tube, very serviceable; it can, if made very long, be cut down to the exact requisite length at the time of operating.

The Causes of Death after ovariotomy are chiefly shock, hæmorrhage, and septicæmia. How far peritonitis, not due to sepsis, may sometimes be

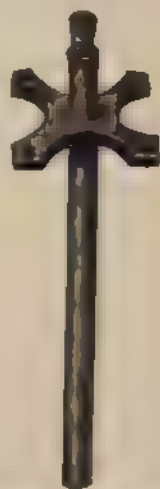


FIG. 197. - India-rubber Drainage Tube, with Plug of the same material.

a cause, it is difficult, if not impossible, to say. Wounds of surrounding organs—the bladder, intestines, ureter, &c.—figure occasionally, although it is to be hoped very rarely. Strangulation of intestines in the wound, by the pedicle, or otherwise, may be considered as among the preventible causes. Death may also occur, as after other operations, from various constitutional affections of the thoracic organs, kidney, liver, &c. Gradually increasing knowledge of the best methods of operation is rapidly diminishing the mortality in every direction, but undoubtedly the greatest danger lies in the various forms of septic poisoning. To extreme care in cleansing the peritonæum, to the careful prevention of hæmorrhage from adhesions, to the utmost attention to the a-septic condition of operator, assistants, bystanders, ward surroundings, instruments, and appliances, and to the proper estimation of the value of drainage, we look for still further advances.

The general indications for the operation are simple enough. Given an ovarian tumour which is increasing in size, or interfering with the health, usefulness, or comfort of the patient, it should be removed, unless, according to views enunciated above, a preliminary tapping is advisable, or unless there is some definite contra-indication.

The contra-indications are becoming daily fewer and fewer. A non-increasing tumour, with only trivial discomfort to the patient, should, I think, be left alone, although I am not unaware of the possibility of the simplest cyst developing papillomatous, sarcomatous, or other malignant contents. I cannot, however, help thinking that in this event it would warn us to interfere by departing from the innocuous conditions premised. Evidences of hæmorrhage into the cyst, or of suppuration within it, or of strangulation of its pedicle, or of dangerous inflammation about it, are indications for immediate operation rather than delay. Supposed malignancy of a cystic tumour pleads also in favour of removal, unless malignant deposits are found elsewhere. The chance of saving a life should outweigh the chance of damaging a table of statistics, and, in respect to immediate danger, the operation is not in the same category as excision of the cancerous uterus. Adhesions, however extensive they are supposed to be, will not deter from careful exploratory incision. Coexisting ascites, which may fairly be supposed to be due to the presence of the tumour, is no barrier to operation. The more debilitated the patient, the greater the incentive to try and save life by operation; but the highest practical skill is necessary to decide how far the health may be improved during a short delay, with suitable general treatment. The whole range of circumstances which were formerly described as "likely to bring the operation into discredit," may now be left out of calculation, from that point of view merely. But general cancer or tuberculosis, and organic diseases of other organs,

which are certain to be aggravated by any operation, are the only true contra-indications to one who knows that he can cope with any reasonable local difficulties.

Oophorectomy.

I am well aware of all the difficulties that arise when we attempt to define what we mean by "oophorectomy" in contradistinction to "ovariotomy." The latter is etymologically a mongrel term, the former includes the latter. I leave the student to study for himself the discussion as to the terms "normal ovariotomy," "Battey's operation," "Tait's operation," and the like—but I accept for the present a term which almost every one understands to mean the removal of the ovaries, not on account of ovarian tumour, but for other reasons.

The preliminary management and the first steps of the operation are the same as those for ovariotomy. Too small an incision is a mistake, for, although the substances to be extracted are often small, there is sometimes great difficulty in separating them from their attachments, or even in finding them. About 4 inches will generally suffice. The division of the peritoneum must be very carefully made, for intestines lie immediately behind it, except in operations necessitated by large uterine



FIG. 198. Wells's Pedicle Forceps, curved.

fibroids. The fundus uteri is the first part searched for, and, guided by this, we pass the finger along the broad ligament and find the ovary. The uterus, with its *annexes*, may be carefully elevated on the sound by an assistant. A forceps, similar to, but twice the size of, the Wells's torsion forceps, is of great use (fig. 198) to grasp the pedicle while it is perforated and tied with silk as above directed, and in ovariotomy this instrument serves a great many useful purposes, which each operator will discover for himself. It is advisable, in nearly every case, to remove both ovaries, as the cessation of ovulation and menstruation is the essential object of the treatment. The experience of Lawson Tait is conclusive, that this is more immediately and certainly accomplished by removing the Fallopian tubes at the same time, even when they are not found, as they very frequently are, to be themselves diseased. It will depend on the relation of the parts whether this is done by the same ligature as that which isolates the ovary, or by a separate one

Where no adhesions, the result of ovaritis, salpingitis, or surrounding peritonitis, exist, the operation is generally easy enough, but in the contrary state of matters the greatest difficulty and danger from hæmorrhage may arise, requiring the utmost skill of the coolest and most practised surgeon. There is also much difficulty, in some cases of large coexisting uterine tumour, in finding and isolating the structures to be removed.

So much has already been said, in former portions of this work, as to the indications for this operation, that I need but recapitulate briefly the conclusions arrived at, conclusions which must be held with modesty, owing to the very recent introduction of the procedure:—

1. As a remedy for the hæmorrhages due to fibroid tumours it has now, I think, a well-established place. When such are tending at all rapidly to the destruction of life, it holds out a fair chance, although not an absolute certainty, of arrest, and it is preferable to operations on the uterus itself, except in such cases as present a bulging submucous tumour or a polypoid form. It should not be undertaken rashly, nor until fair trial has been made of palliative treatment. The circumstances of the patient, as regards her means of obtaining occasional rest and skilful treatment, will, here as elsewhere, form an element in the decision.

2. As a remedial treatment for epilepsy or other nervous affections, I look upon this operation with the gravest suspicion. Its advocates have escaped the opprobrium which fell upon and crushed poor Baker Brown in his advocacy of cliteridectomy under very similar circumstances, but his fate should serve as a warning against undue precipitancy in associating all the nerve disorders of women with local disorders of their sexual organs. The great successes of massage, with its accompanying dietetic and moral treatment, in such cases, surely point to the necessity for general treatment, with less regard to that of the ovaries. At present I should decline to sanction oophorectomy, on this account, with or without the removal of the Fallopian tubes, unless I had some physical indication that these organs were organically affected, and that the local symptoms of this organic affection were irremovable otherwise.

3. In a well-marked case of infantile uterus, with constant and increasing dysmenorrhœa, unrelieved by treatment of the flexed canal, I think this operation is justifiable. Few patients who have suffered long would decline to avail themselves of it, if the whole circumstances involved were fairly put to them.

4. The most important question arises as to the advisability of the attempted removal of the ovaries in cases of chronic ovaritis, or of diseases which cannot always clinically be diagnosed from it. We are most likely to be successful, and are most fully justified when, on

making the incision, cystic degeneration of the ovary is found to exist, or disease of the Fallopian tube is found to be the true cause of chronic distress. But the operation involves great danger when peri-ovariitis or pelvic cellulitis coexist, and I should advise no young practitioner to undertake it until he has fully studied not only the reported cases, but some of those unreported ones of which he may hear in most of our large centres of population.

Vaginal Ovariectomy or Oophorectomy.

Removal of the ovary by the vagina on account of even moderate-sized ovarian tumours seems to me to present so many elements of difficulty and danger, in excess of its removal by the abdomen, that I do not feel it necessary to do more than refer the student to the special works on diseases of the ovary before referred to. As regards oophorectomy, to preserve our distinction between the two, I look upon the operation as increased in difficulty and generally in danger by the vaginal method, although I do not forget that Battey performed his earlier operations, at any rate, in this manner. The patient having been placed in lithotomy position, and the vagina having been rendered a-septic as far as possible, the cervix uteri is drawn down by vulsellum, while with the aid of the duck-bill speculum the vaginal wall is incised behind it in the middle line, so as to admit one or two fingers into the peritoneal cavity. These drag down the ovary if they can find it, and if it is not too adherent, and bring it through the opening, and thus enable us to ligature its attachments and remove it. The other ovary is similarly treated. If one were called on to "spay" a healthy woman, or one who had merely some nervous or hysterical affection, this method would doubtless suffice, and a drainage tube with antiseptic irrigation would ensure fair safety after the operation, but how an adherent ovary, or one removed far from its normal site by uterine tumour, can be thus safely treated, I am at a loss to see, and the simultaneous removal of the Fallopian tube in this way presents still greater difficulties.

I feel it necessary to apologise both for the length of these observations on the removal of the ovary and its tumours and for their incompleteness, but I have acted as far as I possibly could in conformity with the intentions expressed in my prefatory remarks.

CHAPTER XVIII.

DISEASES OF THE FALLOPIAN TUBES. Congenital Abnormalities, Morbid Growths
 Undue Patency, Constriction, Inflammation, Acute and Chronic, Abscess
 (Pyo-salpinx), Tubal Dropsy (Hydro-salpinx), Hemato-salpinx
 EXTRA-UTERINE PREGNANCY

The Fallopian Tubes.

THE diseases of these organs have assumed considerably greater importance during the last few years. It has long been known that they are liable to inflammation, to abscess, and to enlargement from other causes, but these conditions were considered to be rare, and almost impossible of diagnosis from other much more common affections—from ovarian inflammation, pelvic cellulitis, pelvic abscess, &c. The progress of ovariectomy and oophorectomy has revealed the fact that affections of the tubes are more common than was hitherto supposed. Attention being more attracted to them, their diagnosis has become somewhat more easy, in this, if in no other way, viz., that instead of considering them as rarities which must just be borne in mind as possible sources of error, we may take them into consideration, in a large number of cases, as our starting-point for framing a diagnosis by exclusion. The functional activity of the tubes as sources of some of the flow during menstruation, demonstrated by Bernutz and Goupil, and insisted on with characteristic persistency by Tait, has accounted for some of the cases of tubal distention following occlusion, and has caused these organs to be regarded with greater interest by the operator who looks upon the arrest of the menstrual function as a primary object or a desirable sequel of his operation.

The tubes (fig. 199) vary in length from 4 to 6 inches, the right being frequently the longer. They run along the upper margin of the broad ligaments, curving over the ovaries and extending beyond them, one of the fimbriae of the trumpet-shaped extremities maintaining a permanent connection with these organs. Their ciliated lining epithelium works towards the uterus, facilitating the passage of the ova outwards, and probably retarding the ingress of the spermatic fluid. If it were a proved fact that the inherent locomotor powers of the spermatozoa could not overcome this resistance of the Fallopian cilia, we should be com-

pelled to admit that all previous views as to the fertilisation of the ovum taking place normally within the tubes were incorrect, and that extra-uterine fertation could only occur as a result of destruction of the Fallopian cilia by inflammation or otherwise. As far as I can gather from Tait's most recent work this is his view, and there is much to support it.

The Fallopian tubes, when healthy, are scarcely to be made out by bi-manual examination, but when moderately enlarged by disease, their peculiar twisted shape can often be very fairly defined in this way. They give the impression of a knuckle of small intestine or of a bent sausage, but when largely distended they may become as globular as any other tumour met with in the same neighbourhood.

Congenital Abnormalities of the Tubes, of any clinical im-

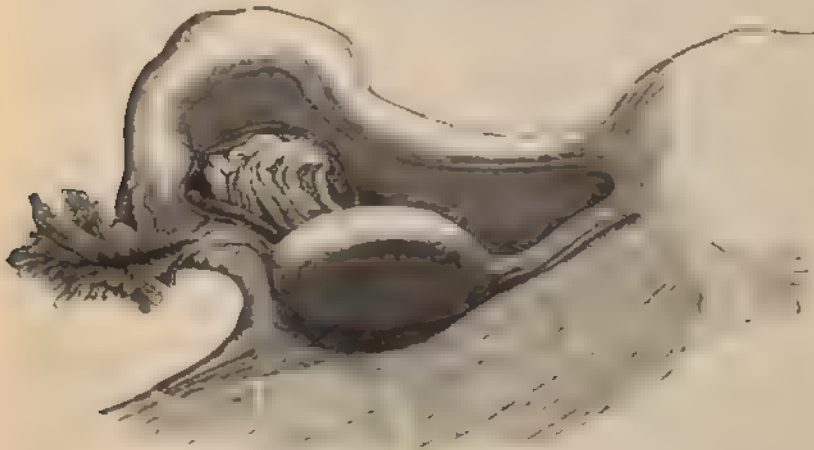


FIG. 199. —The left Broad Ligament, Fallopian Tube, Ovary, and PAROVARIUM, seen from behind (Henle).

portance, are usually coexistent with similar abnormalities of the ovaries. A duplex trumpet-shaped extremity has been noted, but I know of no instance of a double tube from one horn of the uterus. Absence of the tube is found in unilateral development of the ovary and uterus, but a perfect tube has been found when the ovary was quite rudimentary. Occlusion of the tubes at either end may possibly be congenital in some instances, but it is certainly the result of disease in the majority.

Morbid Growths of the Tubes, of almost all kinds, are recorded in the annals of pathological anatomy. There is no organ of the body in which such is not the case. Cancer, sarcoma, tubercle, myomata, lipomata, calcareous deposits, and the like, have all been found in the dissecting-

room, but clinically they cannot at present be separated from similar growths of the surrounding parts except by abdominal incision and removal.

Undue Patency of the Tubes has been strongly insisted on as a frequent occurrence by Matthews Duncan (*Diseases of Women*, 1883). In an article in the *Brit. Med. Jour.*, of March 12, 1881, he has furnished clear proof from various sources that this may exist, occasionally at any rate. The knowledge of this fact should make us additionally careful in the use of intra-uterine or forcible vaginal injections. It will also account for a limited number of cases of pelvic hæmatocoele, and, even although the normal ciliary action of the Fallopian mucous lining usually prevented the ingress of spermatozoa, it might account for certain cases of Fallopian impregnation and extra-uterine pregnancy. As an excuse for the passage of the uterine sound beyond the limits of the uterus it may serve, and sometimes no doubt correctly, but I trust that the practitioner may not have an occasion to avail himself of it. In two deaths which I have known, soon after this accident, but in no way connected with it, there were no such dilatations found on *post-mortem* examination.

Constriction and Occlusion of the Tubes, at either or both extremities, is of not infrequent occurrence, giving rise to dilatation. Although such constrictions may be of congenital origin, they are most frequently due to some form of inflammation, and occasionally to the pressure of neighbouring abnormalities of the uterus or ovary. Their consideration, therefore, involves that of their most frequent cause—inflammation—and, together with the retention of fluids,—of pus, serum, or blood,—to which they give rise, will be most fitly discussed after speaking of inflammation of the tubes. Partial constriction or stenosis is doubtless an occasional cause of dysmenorrhœa, and perhaps of sterility, but complete constriction or atresia is more particularly referred to here.

Inflammation of the Tubes (Salpingitis).—Acute inflammation of the tubes is usually a rapid and dangerous affection. It occasionally constitutes a stage in the wide-spreading septic inflammation which follows upon delivery, but under these circumstances it can hardly be differentiated from the metritis or peritonitis which follow or precede it. The most striking cases are those which sometimes suddenly arise during the progress of acute or chronic gonorrhœa, and even in these it is the communication of the affection to the peritoneum, with violent peritonitis, and possibly rapid death, which often first excites attention. The ordinary treatment of peritonitis is called for, but the question will arise whether, during an acute attack with impending death, the patient may not be saved by the heroic treatment of opening the abdomen and removing the inflamed tube. It is a fact that abdominal section is not only permissible, but is imperatively called for, in acute peritonitis of

lethal tendency, in the presence of an ovarian tumour. Whether it is the relief of tension thus produced, or, as I suspect, the antiseptic cleansing of the peritoneum, which is perfectly brought about by the Listerian methods, or less perfectly, but still often efficiently, by other precautions, I know not, but the fact is certain that peritonitis under this treatment almost invariably subsides, and that the patient is apparently placed in the same position as if no intercurrent inflammation had existed. Acute salpingitis, however, is so sudden in its origin, and violent in its progress, and often so difficult to differentiate, that it will only very rarely happen that a surgeon, with sufficient diagnostic skill, and experience in abdominal surgery, is at hand to undertake this treatment early enough to be of service. It cannot be recommended as an ordinary proceeding—the risks of mal-diagnosis and insufficient operative skill forbid it.

Chronic Salpingitis is not very uncommon. The pathological anatomists have, however, yet to tell us how often it is merely an accompaniment of chronic endometritis, and the clinical physician cannot yet inform us how we are to distinguish its symptoms from those of chronic ovaritis or metritis, until it has caused very serious organic changes in the tubes. In chronic endo-metritis, the occurrence of sudden and occasional discharges of pus from the uterus may afford probable evidence of salpingitis if the cervix uteri is freely patent, but this evidence will not extend beyond the range of probability unless we can detect bi-manually a swelling on one or both sides of the uterus, which disappears after each such discharge. If we are led by this circumstance to the conclusion that chronic salpingitis exists, the urgency of the symptoms will alone determine whether we should continue to trust to the ordinary treatment of chronic endo-metritis, or should act as we shall see we are occasionally called upon to do in cases of definite pyo-salpinx with occlusion of the tubes. The result of chronic salpingitis may, in certain cases, be merely the prolongation of the duration of chronic endo-metritis. In others it may be the means of exciting, at any moment, dangerous inflammation of the peritoneum or ovary. In a third class of cases, by obstructing the tube, it may lay the seeds of future dysmenorrhœa or of hæmatorrhœa. I have no experience of attempted catheterisation or dilatation of the tube in such cases, but, considering the degenerated condition of its walls, I should regard it as peculiarly dangerous, even when practicable. When the tubes remain patent, their lining membrane may be altered, and its ciliary action destroyed, and this could hardly occur without some bearing on the egress of the ovum or on the ingress of the spermatic fluid, to which reference will again be made. But one of the more common results of chronic salpingitis is to cause obstruction of the tube at more than one point. Its outer extremity and fimbriae may become adherent to the neighbouring structures, while its inner extremity,

or any intermediate part, is sealed, and thus an accumulation of pus, blood, mucus, or serum may be produced, leading to the conditions of pyo-salpinx, hœmato-salpinx, or hydro-salpinx.

Pyo-salpinx (encysted abscess of the tube). This affection no doubt exists in many instances of supposed ovaritis with suppuration, and, as has already been said, there is often much difficulty in differentiating it from that, or from abscess due to pelvic cellulitis. Nevertheless, the symptoms and signs are clear enough—upon paper. We have constant wearing pain in one or both groins, increased by every movement, by coitus, and during the menstrual period. We have various disorders of the menstrual function,—entire suppression in some cases, irregularity, pain, or profuse increase in others. In the latter case, one tube may remain patent, but not necessarily so. Coexistent with these symptoms we have, on one or both sides of the uterus, at a greater or less distance from it, a distinct, soft, obscurely fluctuating swelling, ascertainable bi-manually. There is great tenderness in the same region, and the swelling may be fixed or somewhat movable, according to the presence or absence of adhesions. It seldom attains a very great size until after a considerable period, and has the laterally elongated direction and sausage-like shape above mentioned. Such signs and symptoms, clearly made out, point to the existence of tubal distention, but not necessarily by pus. To complete the diagnosis of pyo-salpinx, we require a history of acute inflammation, although, like all similar histories, it is often difficult to elicit. The inflammation may be ascribed to a chill, or to sudden arrest of menstruation, but will more frequently have arisen during the post-puerperal state, or during an attack of gonorrhœa. Accompanying the affection, frequent rises of temperature and sudden chills confirm the diagnosis of the purulent character of the swelling. Occasionally a sudden catastrophe arises, from the bursting of the swelling into the peritoneal cavity, and a few hours may bring about a fatal collapse. Or the inner obstruction may give way, permitting the discharge of pus into the uterus, and this may happen once and again, and even result in permanent cure. The purulent character of this discharge, and the temporary subsidence of the swelling, then render the diagnosis almost complete.

Treatment.—That such purulent collections occasionally make their way into the vagina or rectum, and so eventuate in permanent cure, exactly like a pelvic abscess, I have no manner of doubt; and that, where they have so far advanced in this direction as to point into either cavity, they may be successfully treated by aspiration, and irrigation with carbolic or iodised solution, and drainage tube, I am also convinced. But the question arises—Is this treatment always safe in a purulent tubal collection, which may be loosely connected, if at all, by adhesions to the intervening

structures? There is undoubtedly grave risk in such treatment, almost, if not quite, as great as that involved in opening the peritoneum from above. Yet the constant pain demands relief in some way, and surgery can alone afford it, while the patient is living in constant danger of internal rupture. Exploration by a very fine perforated needle and syringe is not liable to produce dangerous results if antiseptically used, and should not be despised as a means of diagnosis in an affection which always presents a certain amount of obscurity.

But when the diagnosis is clearly established, and when fixation of the tumour to the pelvic roof, with evident tendency to point into the vagina or rectum, are *not* clearly established, abdominal section would seem to be the safest resource. Considerable surgical skill and experience are demanded in most cases, to isolate the swelling without rupturing it, and to decide what is next to be done. If it can be separated, ligatured, and removed, along with the corresponding ovary, which is useless or harmful if left, and often, from adhesions, more easy to remove than to leave, this should be done. If numerous adhesions prevent this, and still more, if the abscess has been burst during the operation, the peritoneum must be thoroughly cleansed, the torn or intentionally-made opening in the cyst must be carefully stitched to the external wound, and the cavity must be healed up by antiseptic drainage. Tait and others have successfully treated many cases in this way, and it seems to me to be a more rational and imperatively-demanded operation than the search for hypothetically diseased ovaries, and their removal for still more hypothetically-associated nervous affections. Bearing in mind, however, the great difficulties so often, if not always, resulting from adhesions, the operation cannot be placed on the same footing, either as regards safety or assured advisability, as the removal of the ovaries and tubes in the case of uterine fibroid disease.

Hydro-salpinx (tubal dropsy). By this term we indicate occlusion of the Fallopian tube, as described above, and distention of its cavity by serous or muco-serous fluid secreted from its walls (fig. 200). If this accumulation has occurred to a considerable extent, it will closely simulate a cyst of the ovary or of the broad ligaments; and, even if aspiration be employed as a means of diagnosis, there is no special character of the fluid by which the diagnosis can be made quite certain. This is, however, of the less importance, seeing that large tumours of the kind are of rare occurrence, and that they call for the same treatment, by aspiration or removal, as those for which they may thus be mistaken. Small accumulations give rise to precisely the same physical signs as those afforded by pyo-salpinx, but there is an absence of the marked and continuous inflammatory symptoms, although the characteristic pain and the menstrual disorders are sometimes equally present. There is the same

occasional tendency to periodic discharge into the uterus as in pyo-salpinx, and its bearing on diagnosis is equally strong. A cure may be effected by tapping *per vaginam*, or by abdominal incision, and the same considerations would influence us in adopting either alternative plan, as in pyo-salpinx. In both affections recovery occasionally occurs after a spontaneous discharge of the encysted fluid by the uterus.

Hæmato-salpinx, or accumulation of blood in the tubes, may be independent of occlusion of their inner extremity, when it is associated with hæmatometra from atresia of the uterus or vagina. In such instances the treatment is that of the atresia of the passages (p. 146). Knowing, as we now do, that the tubes partake in the congestion and sanguineous discharge of menstruation, although it is still doubtful whether this is by any means constant, it is not surprising that a tubal dilata-

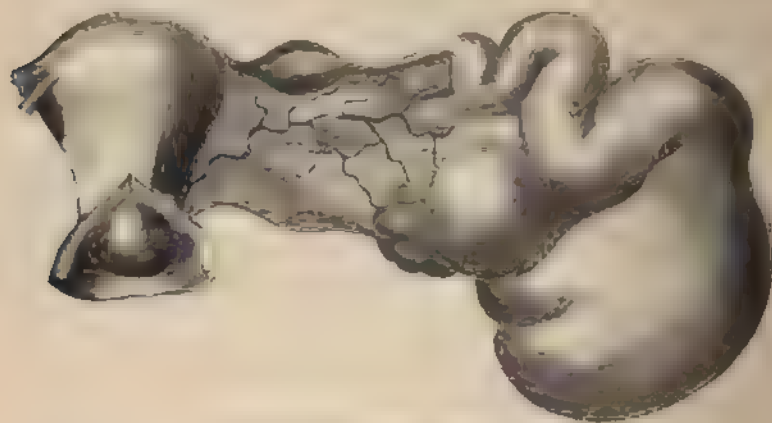


FIG. 200. Tubal Dilat. (By Bland et Dupes).

tion should sometimes contain blood, instead of serum, mucus, or pus. The infrequency of this seems to me, however, to point to the fact that tubal menstrual discharge may not be so constant a phenomenon as uterine. The presence of blood in a constricted tube will give rise to a swelling of somewhat more solid character than when pus or serum are present. Hence these tumours have been mistaken for solid outgrowths from the uterus. If, however, the tubal character of the disease is fairly certain, it is amenable to the same methods of treatment as other tubal distentions, but aspiration will be still less likely to be successful.

Lawson Tait gives the following as his statistics of removal of these three forms of dilated Fallopian tube by abdominal incision (*Diseases of the Ovaries*, 1883, p. 332). He has thus removed twenty specimens of pyo-salpinx between 1879 and August 1882. All these patients have

EXTRA-UTERINE PREGNANCY.

recovered. He has, in the same period, removed twenty-four specimens of hydro-salpinx; all these patients have also recovered. He mentions one case of successful opening of a hæmato-salpinx, and subsequent treatment by drainage through the abdominal wound (*op. cit.*, p. 71), but he gives no list of removals. We are bound, I think, either to dispute the accuracy of the statistics, which I certainly am not prepared to do, or to admit that so skilful a diagnostician and operator as the writer possesses an almost certain means of cure for a most intractable and dangerous malady. Yet I am nevertheless bound to say that fatal cases of this operation are, I believe, at present occurring in the hands of rash imitators, who are never likely to have the opportunity of acquiring similar skill. It is impossible to exaggerate its difficulties when the dilated tube has to be separated from numerous adhesions.

Extra-Uterine Pregnancy.

A full notice of this, happily, rare affection is more suited to the pages of a work on Obstetrics than to one on Gynecology. Yet it cannot be altogether omitted here, for, rare as it is, it must always be present to the mind of the physician who is called upon to diagnose pelvic or abdominal growths, and its frequent relation to the Fallopian tubes points to this as the most fitting place for its introduction. The student will find a very excellent description of this abnormal condition, with a complete tabulation of cases, in a work by Dr Parry of Philadelphia (*Extra-uterine Pregnancy*, London, 1876).

Causation and Varieties.—It is hardly necessary for our purpose to discuss the views enumerated by Parry and others as to the causation of extra-uterine formations. Those who believe, as the majority still I think do, that the spermatozoa freely enter the Fallopian tubes in ordinary impregnation, and there effect the commencement of individual life in the ovum, will look upon constriction of the tubes from inflammation in or around them as the most common cause, by preventing the descent of the impregnated ovum beyond a certain point, and will also admit that impregnation may be produced before the ovum enters the tubes at all, while its subsequent entry is prevented by various causes—spasm of the tubes, wrong application of their fimbriae to the ovary, &c. Those who, on the other hand, consider that the ciliary action of the lining membrane of the tubes normally prevents the ingress of the spermatie fluid, will look rather to chronic disease and destruction of the cilia, or to undue patency of the tubes, as the cause of the abnormal presence of the spermatozoa beyond the uterus, and of their untoward physiological

action in this wrong site. Extra-uterine foetation undoubtedly occurs most frequently in not very young patients, and thus points to the probability of chronic salpingitis as having something to do with it; but it does not clear up the question as to whether it acts by producing constriction of the tubes and retention of the ovum as enforced by Bandl, or by producing destruction of the cilia, or dilatation of the tubes, with abnormal admission of the fertilising element, as enforced by Tait and partially believed by Parry.

Classification.—Most elaborate classifications of extra-uterine foetations, according to their exact site, have been made by various writers. They interest the embryologist or pathologist much more than the practical gynaecologist. For the most part, the latter finds the ovum arrested and developing itself in the Fallopian tube. Occasionally he notes this occurring so close to the uterine end that the cavity hollowed out for itself by the foetus is partly uterine and interstitial. More rarely, the development of the ovum really goes on in the horn of a bled uterus, practically, it is still extra-uterine, unless the abnormal horn is sufficiently developed to allow of a natural termination of the pregnancy. Now and again the growth takes place in such intimate connection with the ovary that it is difficult or impossible to say whether it commenced there or at the extreme end of the tube. Once more, the ovum is sometimes found developing itself within the peritoneal cavity, or between the layers of the broad ligament. In such cases it cannot be denied that the ovum may have dropped or pushed its way into these situations after impregnation, and without entering the tube at all, but there is most frequently a clinical history to show that at some early period a rupture of the original sac, in the tube or elsewhere, took place, ending, not in death from hæmorrhage or peritonitis, as it too frequently does, but in a resumption of growth in the new situation. From the above description of observed facts, the student may form for himself a classification into tubal, ovarian, interstitial, tubo-ovarian, tubo-interstitial, intra-peritoneal, extra-peritoneal, or any other intermediate types of extra-uterine foetation. The most common form is undoubtedly tubal.

General Considerations.—The outer covering of an extra-uterine foetation is formed by the structures within which the ovum is lodged, by the tube in the majority of instances, perhaps by the interstitial substance of the uterus in a few, or by rapid development of the ovarian stroma in some, and certainly by gradually increasing inflammatory lymph in others. The tubal wall, although the most common, is the frailest envelope. It would doubtless be an advantage in such cases if muscular hypertrophy of the wall, described by Simpson as a rare occurrence, existed, but this covering usually gives way about the second

or third month, causing fatal hæmatocœle, or very rarely permitting further development of the fœtus, after recovery from the shock and hæmorrhage. When adhesions and accumulations of lymph have once commenced around the embryo, they are capable of further stretching and of gradual increase in strength, and pregnancy may thus go to the full time, with further results afterwards to be mentioned. The human fœtus, however, requires the placenta for its oxidation and nutrition. How is the maternal element of that structure obtained in such cases? Wherever the implantation of the embryo occurs on a living structure, vascular growth and proliferation follow, and the tubal wall, or the interstitial structure of the uterus or ovary, or the peritoneal covering of the uterus, intestine, pelvic fasciæ, or broad ligament, each answers to the stimulus, and endeavours, in a more or less satisfactory manner, to supply the want. In normal pregnancy, provision is made in the uterus for the sealing up of torn sinuses or villi after delivery; but such is not the case at all, or very feebly so, in these other organs or tissues. Thus it happens very frequently that rupture of the tube, when pregnancy is tubal, is caused by placental growth as well as by distention due to growth of the fœtus; or, wherever the placental implantation may be, the corresponding maternal growth is insufficient, and the fœtus dies of starvation—a fortunate issue; or, again, if attempts are made at removing the fœtus by abdominal section, and the operator forgets that if he scrape away the placenta there is no provision for sealing up the torn vessels of its maternal portion, the operation is rendered unsuccessful by uncontrollable hæmorrhage. If the cord be tied and cut short, and the placenta be left alone, nature is equal to the task of gradually absorbing or otherwise getting rid of her now useless inpromptu production.

A very important fact in connection with extra-uterine gestation is, that the uterus so far recognises the presence of a growing embryo, although it is not within its cavity, as to undergo some of the vital changes which it would do in normal pregnancy. The sympathetic disorders of normal pregnancy are constantly met with, as we have seen they may all occasionally be in the presence of uterine or ovarian tumours, but in extra-uterine pregnancy the uterus may, and generally does, increase in size, may show the slight cervical changes, the anteversion, and the changes in the shape of the body which characterise it during the earlier months of the normal state. Moreover, it may, and often does, develop a true decidua mucosa membrane, which it throws off either at the full time or at some antecedent period, with all the symptoms of an abortion.

Symptoms and Signs.—It is but very rarely that an extra-uterine pregnancy is recognised in its earliest stages. There are the usual

symptoms of pregnancy, modified, it may be, to some extent, but not sufficiently to create alarm. The suppression of menstruation may be incomplete, or last for only one or two months. It is then followed by irregular and sometimes smart hæmorrhages, and portions of decidua may be found if looked for. After this the enlargement becomes apparent as decidedly unilateral, and is nearly always accompanied by frequent acute pains in the groin, and by symptoms of intercurrent inflammation. There is also, for the most part, great pressure on the rectum and bladder, owing to dipping of the tumour into the pelvis. These symptoms lead to a careful physical examination, and a tumour is discovered behind and to one side of the uterus. As the tumour grows, the uterus is pushed laterally in the opposite direction. If nothing occur to terminate the pregnancy, the foetal heart becomes in time discoverable—ballotement may be made out as in normal pregnancy, although seldom so clearly, and palpation discovers the foetal limbs through the abdominal wall. These are the symptoms in those rare cases which go on to, or nearly to, the full time of pregnancy. Most commonly, however, the abnormality declares itself in another way, and before any attempts at accurate diagnosis have been made or thought of. Sudden violent pain occurs, which may or may not be apparently caused by some action of the patient, such as stooping or lifting a heavy weight. Collapse rapidly follows, with all the signs of internal hæmorrhage. We have, in fact, a violent hæmatocoele, such as will shortly be described, and produced by the rupture of the sac and the escape of its contents into the peritoneum. The patient may be moribund when first seen, or if she recover, it is after some such sequence of events as will be spoken of under hæmatocoele, and we may never know with absolute certainty whether pregnancy existed or not. Or, more rarely, she may rally from the shock and hæmorrhage only to find, by and by, that the tumour is continuing to develop in its new surroundings. In other ways, also, the abnormal pregnancy may come to an untimely and perhaps fortunate conclusion. Owing to deficiency in the placental supplies, or to various causes which may affect also a normal pregnancy, the foetus may die at any stage. Abortion cannot follow, but the foetus remains encysted, and may so remain during the mother's life, undergoing mummification or conversion into adipocere, while the placental circulation dwindles away. This favourable result is too seldom met with, however, in its entirety. The new foreign body ere long exerts its influence as such. Suppuration is set up; the abscess bursts into the rectum, vagina, or elsewhere; portions of foetal bones and other structures are from time to time eliminated; and, after a prolonged struggle, the patient succumbs, or recovers with broken health.

If pregnancy goes on to the full time, the foetus may die gradually, and

without marked change in the symptoms, or there may be an exact imitation of the first stage of labour, which dies away without result. Subsequently the foetus becomes encysted and mummified, or its sac suppurates, as above described. At, or soon after, the time of foetal death, however, there is usually a considerable subsidence in the size of the tumour, even if it enlarge again, and the history of this symptom has been looked upon as one of great importance in the differentiation of an extra-uterine pregnancy from other tumours.

To sum up: The results of an extra-uterine pregnancy may be

1. Rupture of the sac from the second to the fourth month. This, followed by death from hæmorrhage or peritonitis, is the most common result. Followed by complete recovery it is unfortunately rare, but it may be followed by temporary recovery, and continued growth of the foetus, with subsequent developments.

2. Death of the foetus at an earlier or later stage. This is sometimes, though unhappily rarely, followed by permanent encystment, with mummification of the foetus, and practical recovery. Generally, suppuration occurs sooner or later, with very doubtful result to the patient. If she escape the constant danger from hectic, septiciæmia, or perforation of important viscera, she recovers.

3. Rarest of all. Successful removal of a viable child *per abdominem*.

DIFFERENTIAL DIAGNOSIS.

The following conditions have been, and are liable to be, mistaken for extra-uterine pregnancy:—

- | | |
|---|---|
| 1. Normal pregnancy. | 6. Fallopian distention. |
| 2. Do. do. with retroversion or retroflexion. | 7. Uterine outgrowths. |
| 3. Pregnancy in one wing or horn of a bifid uterus. | 8. Pelvic hæmatocœle. |
| 4. Ovarian tumour. | 9. Pelvic inflammatory exudations or abscesses. |
| 5. Cyst of broad ligaments. | 10. Cancer of pelvis or peritoneum. |

1. *Normal Pregnancy.* A careful study of the signs of pregnancy, and an equally careful bi-manual examination of the uterus and its surroundings, should suffice to differentiate this from those rare cases of extra-uterine foetation which reach a stage of development beyond three or four months, and in these the occurrence of occasional hæmorrhages, or the resumption of natural menstruation, while the tumour goes on increasing, or the occurrence of frequent or constant pain, will frequently lead to the necessity for such an examination. During the first two or three months, the unnatural situation of the pregnancy is seldom suspected until the bursting of the tumour occurs. The practitioner should not place too much stress on the lateral situation of the swelling, especi-

ally to the right side, if its evidence in favour of extra-uterine pregnancy is not corroborated in other ways. Preternatural thinness of the uterine walls may at later stages give rise to strong suspicion of the foetus being extra-uterine. Tait mentions several such cases, and I have seen several myself, but never one in which the absence of any other strongly marked abnormal symptoms, and the exercise of careful diagnostic manipulation did not prevent error. I have not even been driven to the use of the sound, which I should not, however, hesitate to use if I could not assure myself otherwise.

2. *Retroversion or Retroflexion of the Gravid Uterus*.—If we trust to vaginal examination alone, this may very closely simulate extra uterine pregnancy. But a history of previous uterine displacement, or the sudden development of pelvic pressure and urinary retention in the course of a normal pregnancy, without symptoms of hemorrhage, point more strongly to retroversion. Careful bi-manual examination will assure us of the continuity of the uterus, as felt *per vaginam*, with the mass in Douglas's pouch, and will lead to the reposition of the version or flexion, with or without anaesthesia.

3. *Pregnancy in one Horn of a Bihorn Uterus*.—If this takes place in an extremely undeveloped horn, it is practically an extra-uterine foetation, and will be followed by rupture of the sac, unless prevented by a very early abortion. If, however, the larger horn is occupied, or if they are both fairly well developed, pregnancy may be terminated by normal labour. The discovery of a double cervix would, of course, make clear the state of matters; and in a case where the tumour was manifestly one-sided, although clearly attached to the uterus, while bi-manual examination revealed a fundus uteri at its side, we should be fully justified, at the risk of producing abortion, in dilating the cervix, and making an intra-uterine exploration with the finger. With regard to all these cases of differentiation between normal and ectopic pregnancy, I cannot do better than quote the words of T. Gaillard Thomas (*op. cit.*):—"Very often we hear of physicians being blamed on account of diagnosis in those cases which suddenly die from rupture. Every medical man who countenances such a charge demonstrates his want of experience, or his want of professional loyalty, by so doing. Very often there is nothing in these terrible cases to excite suspicion: very generally nothing to decide us positively, even when suspicion is excited." My own somewhat extensive experience in doubtful cases of the kind would lead me to add—Granted an absolutely certain pregnancy, with very strong suspicion of its being extra-uterine, the probabilities are nevertheless very greatly in favour of its turning out to be intra-uterine.

4. *Ovarian Tumours*. If extra-uterine pregnancy were a common

condition, mistakes would undoubtedly often arise between it and the earlier stages of cystic ovarian growths, although they ought to be impossible when the dimensions of either abnormality are great. The carefully investigated history of the case is our main reliance. In ovarian tumour we have no conclusive history of pregnancy, in extra-uterine pregnancy everything points strongly in that direction. In the former condition we do not hesitate for a moment to leave matters to the arbitrament of time, in the latter we also wait, but we do so with incessant watchfulness and frequent examinations for determining evidence. Until some evidence of *life* in the tumour is obtained, the diagnosis may remain uncertain, but if constant wearing pain is present, and the history points at all strongly to pregnancy, and if we can eliminate normal uterine pregnancy, there can be no doubt that abdominal section furnishes our surest means both of diagnosis and treatment. Fortunately the necessity for this means of diagnosis is rare. At a case of operation of the kind by Dr Atlee in 1867, Sir Spencer Wells, Dr Nicholayson of Christiania, Drs Burpee and Drysdale of Philadelphia, and Dr Atlee's elder brother, were present, and acknowledged that they had never been called on to diagnose a case of the kind.

5. *Cysts of the Broad Ligaments*, and

6. *Dilatations of the Fallopian Tube*, of moderate size, present so many features in common with ovarian tumours, and so few symptoms diagnostic of pregnancy of any kind, that we may place them in the same category as ovarian tumours, as far as regards their differential diagnosis from extra-uterine pregnancy. The history of suppurative inflammation obtainable in pyo-salpinx is totally absent in the early stages of abnormal foetation.

The combinations of these affections which may possibly exist are utterly beyond description in a general, or even in a special work, on the subject of any of them. A thorough knowledge of the signs and symptoms of each, a large special experience, and that judicial tact which characterises the truly great physician or surgeon, could alone lead to anything like absolutely certain conclusions. Fortunately it is just in the most doubtful cases that all would be agreed as to the advisability of waiting a short time for further evidence, and in the absence of that, of performing abdominal section as a means of diagnosis or treatment, not, of course, until the possibility of normal pregnancy had been absolutely eliminated.

7. *Uterine Outgrowths*.—These, while small, and therefore liable to be mistaken for early extra-uterine pregnancy, are always hard and solid. Their rate of growth does not correspond with that of a pregnancy, normal or extra-uterine. Their history is rather that of menorrhagia

apt to assume the most remarkable shapes, and to present irregularities of surface, sharp indentations, and other features, which resemble very closely portions of a mature fœtus. I have found the cephalic structures and the contour of the ribs, or of the extremities, most accurately imitated in this way, on abdominal palpation or vaginal touch, far more than by any other abnormal affection. On four or five occasions I have seen inalignant masses mistaken by intelligent practitioners for extra-uterine fœtuses. I am satisfied, however, that in every one of these a careful inquiry into the family history of the patient, a minute examination of the external signs, care being taken not to attach too much importance to one accidental resemblance to a fetal structure, a patient study of the history and progress of the tumour, and, above all, a cautious delay in forming an opinion on so difficult a question, would have avoided mistake.

Treatment.—The treatment of extra-uterine pregnancy will vary according to the circumstances in which we encounter it, and according to the stage of its development. Three conditions, at any rate, demand separate consideration—(1) The early stage of development, say up to the third or fourth month, and before rupture has occurred; (2) the time of rupture; and (3) the later stages of fetal existence, the patient having escaped or survived rupture, the fœtus being either alive or dead.

1. With regard to the earlier stages of development, and before rupture. The great difficulty in our way lies in the fact that the abnormal condition is generally unsuspected until it is too late, or, when suspected, the difficulty of diagnosis is so great that the practitioner is compelled to hold his hand. If we could feel absolutely certain of the diagnosis, no one would countenance a do-nothing policy in the face of the terrible, and almost inevitable danger from rupture. Tubal pregnancy is by far the most common form, and tubal pregnancy almost invariably ends in rupture, and generally in death. The differentiation of other forms, less, but only somewhat less, liable to rupture, is so fraught with difficulty that the tubal form may be accepted as the one which must regulate our procedure. Two lines of practice are open to us. We may endeavour to arrest the life of the fœtus, and so hope to stay its growth and thus avoid rupture, leaving future indications to nature; or we may attempt removal of the fœtus, with or without its sac. For the former of these ends the administration of drugs,—of iodine, strychnia, mercury, &c.,—to the mother has been tried, but absolutely without success. Tapping the cyst *per vaginam* with a very fine trocar, so as to draw off the liquor amni, has been successfully used; but the result is uncertain, and death from hæmorrhage caused by the puncture, and from sudden collapse and rupture of the sac, have followed.

The injection into the sac of $\frac{1}{4}$ to $\frac{1}{2}$ a grain of morphia by a long subcutaneous needle and syringe is less open to danger. Its effect on the foetal life is, however, problematical, and fatal delay may thus ensue. We have no means of gauging our probable success, at this early stage, but by waiting for the result. Again, foetal death may be brought about by the passage of a strong continuous electric current. One electrode may, as Thomas recommends, be placed in the rectum, and the other against the most prominent part of the sac, or one may consist of a fine needle, insulated except at its extremity, which is inserted into the tumour. I have no experience of this method, and few cases of any value are recorded. One objection, however, exists to all these methods, viz., that the fetus may die spontaneously, or its life may be arrested artificially, but death of the placenta may not follow, and its vegetations may go on sprouting beyond even the normal extent, thus greatly complicating any future proceedings. On the whole, I think that tapping by fine trocar, with all its risks, is the most advisable of the plans for arresting foetal life yet mentioned. It may prove of infinite service by correcting our diagnosis, and I think I should adopt it in any case where I felt somewhat uncertain on the point. But it is a question whether the bolder and more radical plan of excision of the morbid growth is not, in the long run, the safest. Use what methods we may to induce the death of the fetus, and successful although we may be at the time, there are still enormous risks to be run afterwards. Mummification of the fetus, or calcification of its envelopes, with prolonged or permanent quiescence, is but an exceptional result. Suppuration of the sac, with all the dangers of peritonitis, septicaemia, &c., is an almost inevitable sequel, sooner or later. No tyro would ever venture, I hope, to take upon himself alone the responsibility of deciding in such a case, and even the most experienced are hardly warranted at present in speaking or writing too dogmatically; but I cannot resist the belief that, in a clear and undoubted case, the greatest ultimate safety would lie in the removal of the fetus, with its containing sac if possible, by abdominal incision, and the earlier the better.

2. We may be called to a case in which rupture has just taken place, with its inevitable shock and hæmorrhage, and much will still depend on diagnosis. If the case had previously been recognised as one of extra-uterine gestation, or if the summary we can hastily obtain of the previous symptoms, together with the physical signs observable, render this almost certain, there lies before us only one course, if we feel equal to the task, or can obtain efficient help. To trust to the staunching of the internal hæmorrhage by cold or other hæmostatic means, is to trust to the frailest of hopes. The question of how far the patient can stand the necessary abdominal section, will, of course, be a most difficult one to

decide, but it will be rendered less difficult if the practitioner will bear in mind that the chance of saving his patient must utterly outweigh any calculations as to the result of the operation on his own reputation. The steps of the operation proposed I will condense from the words of Lawson Tait: "After the peritoneum has been opened, a careful examination of the relations of the ovum must be made. If the child is loose in the abdomen, it merely requires careful removal, careful avoidance of the placenta, and the closure of the wound in the abdomen save at the lower part, through which the umbilical cord must be drawn, and which must be kept open for the passage of the placental debris through a wide glass drainage tube. The discharge must be drawn up by means of a syringe, three or four times every twenty-four hours, and the cavity occasionally washed out with a 5 or 10 per cent. solution of sulphuret of potassium (carbolic acid 1 in 401). If the fetus is found in a sac which is not formed by the folds of the broad ligament, the sac must be carefully opened in the middle line, emptied and cleaned out as well as possible, and then its edges must be stitched round to the edges of the wound." The remaining treatment is the same. "The golden rule for this operation is to avoid touching the placenta."

Even although the child were loose in the abdomen, I should search for any recently ruptured sac and treat it as above.

If I found that the rupture was within the broad ligament, and quite outside the peritoneum, or if I could with any confidence diagnose this without abdominal incision, I should treat the case as one of intracellular hæmatocele (see Chap. XIX.).

3. Supposing that the gestation has reached a later development—from the sixth or seventh month onwards. The danger of rupture is now lessening, or may have been previously run, and there are probably extensive adhesions which tend to prevent it, while they increase the difficulty and danger of surgical interference. The urgency of the symptoms will largely determine our action. If there be constant pain and fever, which are evidently wearing out the patient, and the child lives, excision is called for, giving the child the chance of reaching the seventh month at least, if possible. A careful study of the position of the sac and its probable attachments must decide the question between abdominal section and opening the cyst by the cautery *per vaginam*. I have little fancy, however, for such vaginal operations. One thing is certain, all experience shows that if the placenta is not contained within a removable cyst—if it is attached to surrounding structures—no attempt should be made to remove it. The cord should be divided by twisting or by cautery, and its removal left to nature and the drainage tube. With this precaution a living fetus has been successfully removed by abdominal incision. The treatment of a suppurating sac, at whatever

stage of pregnancy, demands the highest patience and skill, but many instances are now recorded where these have overcome apparently insuperable difficulties and dangers. With careful antiseptic precautions, matter may be evacuated, and successive portions of fetal structure assisted in their egress, until finally the cavity heals, and the cure is complete.

It were quite beyond the scope of this work to attempt detailed instructions in every varying case. The practitioner should possess the requisite knowledge as to the nature and diagnosis of extra-uterine pregnancy, but for its treatment, in all but sudden emergencies, he should carefully study one or more special monographs, such as that of Parry, to which I have referred above, or Mr Tait's paper in the *Brit. Med. Jour.* of August 16, 1884. In the larger centres of population, at any rate, he will be inexcusable if he does not share the responsibility of the case with some one who may be presumed to have a larger experience of emergencies of a similar kind.

Should a tumour of this nature be perfectly quiescent, existing far beyond the nine months of pregnancy, and showing no sign of suppuration, it should, I think, be absolutely left alone, the patient wearing a comfortable abdominal belt.

CHAPTER XIX.

PELVIC DISORDERS. *Pelvic Inflammation*, including Pelvic Peritonitis, Perimetritis, or Peri-uterine Peritonitis, and Pelvic Cellulitis, Parametritis, or Peri-uterine Cellulitis. *Pelvic Hematocoele*. *Pelvic Abscess*.

UNDER the heading of pelvic disorders, it is customary (and I intend to adhere to the custom) to classify two affections only, viz., inflammation of the pelvic cellular tissue or peritoneal covering, and escape of blood into, or upon the same,—pelvic inflammation and pelvic hæmatocoele. Some prefer to use the term “peri-uterine” instead of pelvic. In addition to these two affections, we must mention a common result of either—pelvic abscess.

The literature of this whole subject is enormous, although it mainly dates from a very recent epoch in medical history. Owing, however, to discrepancies in the views of the various writers on some of the simplest questions of anatomy, to the complications in nomenclature which have been introduced, to the difficulty of obtaining *post-mortem* evidence on the questions involved, and, I may add, to the difficulty of making anything of the tangled and adherent structures displayed by such *post-mortem* examinations, the whole of this literature is most confusing. I would advise the student or young practitioner to have nothing to do with it until he has mastered the few elementary details which I hope to present to him, and has verified their truth or the reverse in a certain number of cases. In an ordinary practice, if he be observant, he may soon have opportunities, and a very short experience of hospital work will speedily bring under his notice numerous examples of at least the chronic form of each of those affections, affording material for diagnosis and differentiation.

On pelvic inflammation he may then consult Bernutz and Goupil, *New Sydenham Society*, 1866; Sir J. Y. Simpson, *On Diseases of Women*, Edin., 1872; Matthews Duncan, *On Perimetritis and Parametritis*, Edin., 1869; W. O. Priestley, *Reynold's System of Medicine*, vol. v.

And on pelvic hæmatocoele, Bernutz and Goupil, *New Sydenham Society*, 1866; W. O. Priestley, *Reynold's System of Medicine*, vol. v.

Pelvic Inflammation.

One of the points which stands out most clearly throughout all this literature is, that there are considerable distinctions between those hæmorrhages or those inflammations which occur upon the peritoneal covering of the pelvis, and those which occur in its cellular tissue. They differ much, as might be supposed, in their physical signs, and they differ somewhat also, in typical cases, in their symptoms, prognosis, and even treatment. In the inflammatory affections we not infrequently have the two localities simultaneously affected, and, with regard to both inflammation and hæmatocele, there are cases where it is difficult or impossible to decide on the affected locality; but it is always desirable, both for scientific and for practical purposes, to endeavour to do so. We shall therefore speak of pelvic inflammation under two headings—pelvic peritonitis and pelvic cellulitis,—and of pelvic hæmatocele we shall distinguish two forms—the intra-peritoneal and the intracellular.

Pelvic Peritonitis, or Perimetritis, or Peri-uterine Peritonitis.

Leaving out of consideration, for the present, the relative frequency of this affection, and of the corresponding affection of the cellular tissue, we mean by each of the above terms to describe an inflammation wholly, or almost wholly, confined to the pelvic peritoneum or to its contiguous serous surfaces.

Pathology.—There exists at first the usual hyperæmic condition of inflamed serous membrane. For the most part, lymph is very early exuded upon the inflamed surface. In some cases this may be, as in dry pleurisy, a thin solid layer, which coats the serous membrane, and which may ultimately lead to the adhesion of neighbouring parts, to the occlusion of serous pouches, and to the contraction of adhesions between contiguous viscera. In this way, the ovaries, Fallopian tubes, uterus, neighbouring intestines, or even omentum, may, each or all, acquire adhesions to one another, and, in the process of contraction which ensues, may become displaced, distorted, or, in the case of the hollow or tubular organs, constricted, with obliteration of their canals as a result. Generally, however, more or less of the effused lymph is fluid at first, and thus, following the laws of gravity, trickles down into the most dependent part of the peritoneal sac. The lowest portion is undoubtedly that which constitutes Douglas's pouch, and if we picture the patient to

ourselves as lying for the most part on her back, and allow for the natural obliquity of the pelvis, it will not be difficult to form an idea of the successive levels that will be reached by increasing quantities of this fluid, if obstacles are not presented by former adhesions (fig. 201). Inspissation of the fluid lymph soon occurs, and it is almost always flocculent from the first. In this way the whole speedily becomes solid, or the various layers, thus inspissated, may retain between them for a considerable time some remaining fluid, which is afterwards absorbed, or itself undergoes inspissation, or, much more rarely, degenerates into pus. In the chronic forms, successive additions are thus made, often very insidiously, until the whole inspissated mass reaches far up into the abdomen, and dips deeply into the pelvis, pushing the peritoneum and subjacent organs before it. Matthews Duncan points out that extensions of exudation to the higher parts of the abdominal peritoneum may become, during the process of recovery, cut off from the rest, and remain when all traces of the affection, in its earliest sites, have passed away. This "re-

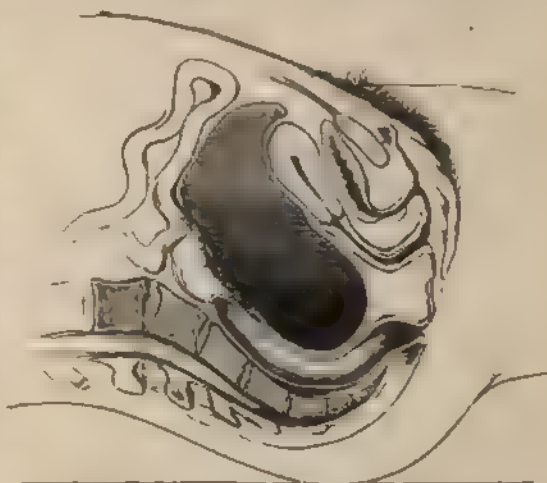


FIG. 201.—Successive accumulations of Lymph in Pelvic Peritonitis. Shown in Section.

mote perimetritis," as he terms it, very possibly accounts for some of those puzzling cases of matted intestines and lymph, with or without encysted ascitic fluid, which occasionally give rise to much difficulty in the diagnosis of cystic ovarian growths.

Displacement of the uterus almost always occurs, generally in a forward direction, and it speedily becomes fixed, as by a plaster of Paris mould, in the abnormal position. It may, however, happen that fixation takes place early, and in almost the normal position, or various accidents may, much more rarely, lead to some lateral displacement, or to elevation.

If cut into at an early stage, the exudation would nearly always contain within its meshes some centres of yellow serous fluid; but ultimately it may become as hard as gristle, or consist of interlacing

bands of every variety of strength and thickness. The progress of such exudations is towards either complete absorption, or partial absorption with remaining contractions or adhesions, or towards suppuration, the last result producing one form of pelvic abscess. This last termination will be disregarded until we have mentioned the facts concerning pelvic cellulitis and pelvic hæmatocele, which may equally, if not more commonly, give rise to pelvic abscess.

In rare septicæmic cases the fluid may be purulent from the first, or from a very early stage.

Symptoms and Signs.—The symptoms, and still more the physical signs, are those which we might expect from the above mentioned pathological conditions. The symptoms of general peritonitis in its acute form—rigors, increased rapidity of pulse, rise of temperature in very varying degree, severe shooting pain, nausea and vomiting, diarrhoea occasionally, and tympanites—are for the most part present, but the pain, as well as the tenderness to touch, are more or less limited to the lower part of the abdomen; or the latter is felt on vaginal examination. When the disease commences in or has assumed a chronic form, the symptoms may be very obscure, consisting chiefly of backache, discomfort in the region of the bladder, leucorrhœa, disordered menstruation, and other indications which are common to most uterine or pelvic disorders. Indeed, it is very usual for some peritonitis to occur in an almost latent form in connection with ovarian tumours, displacements of the uterus, Fallopian disorders, and the like, its existence being hardly suspected until we find the adhesions which make these other affections less amenable to treatment, or the bulky exudations which render their diagnosis much more difficult. The chronic form is almost indefinite in its duration, owing to the constant tendency to relapses. The acute form, if of septic origin, as after labour, or in other severe types, the gonorrhœal for instance, may end fatally in a few hours, or may pass gradually, and with many subacute exacerbations, into the chronic.

The physical signs in acute pelvic peritonitis may at first be very slight, amounting to little more than the evidence of great pain when pressure is made by the finger on Douglas's pouch or on the top of the vagina, anywhere around the uterus, or above the pelvic brim. It is generally stated that while the exudation is fluid it cannot be felt by a vaginal examination, as it recedes into the abdomen on pressure. But I am sure, from personal experience, that inflammatory or sanguineous fluid may often be felt in Douglas's pouch by gently palpating it through the vagina. When solidification has taken place, the hardened lymph can be very clearly felt; and the more chronic the affection the more clear is the evidence thus derived. The position of this lymph is in

most cases very characteristic. It will either surround the uterus, rendering the whole roof of the pelvis hard, and fixing the uterus in its centre, or it will more often greatly predominate behind, displacing the uterus, and fixing it forwards behind the pubes. The reason of this is obvious, if the reader has followed the statements as to the pathology. The posterior swelling—that in Douglas's pouch—may remain soft and pulpy for a considerable time after the rest of the exudation has hardened. Anteversion, or retroversion or flexion, or even lateral versions of the uterus, may coexist, either as the result of pushing by the first exudation or of dragging by its subsequent contraction; they are more common, however, in cellulitis. Until the case has become chronic, it is difficult or impossible, without anaesthesia, to define the upper borders of the exudation. Even percussion may quite fail us, owing to the entanglement within the mass of portions of intestine, which cannot float above it, as they otherwise would.

Diagnosis. It will greatly facilitate our arriving at the differential diagnosis of pelvic peritonitis if we regard it from two separate points of view—if we consider it—first, as liable to be mistaken for other acute affections, at a time when it is recent and acute, and when we have few physical signs to guide us; and, secondly, as requiring differentiation from several chronic affections, some of which are of non-inflammatory origin, after its exudations have given rise to stable pathological lesions. These divisions correspond roughly to the acute and chronic stages.

Acute Stage.—In the acute stage, pelvic peritonitis may be mistaken for inflammation of the cellular tissue (*pelvic cellulitis*), for *acute metritis*, *ovariitis*, or *salpingitis*, and for *recent pelvic hæmatocoele*.

The general symptoms of acute inflammation somewhere about the pelvis, are observable from the commencement in all of these affections except the last, and they are apt to supervene very quickly and with more or less severity upon hæmatocoele also, after the first period of shock and hæmorrhagic anaemia. Recent hæmatocoele we may, however, dismiss at once by stating that its diagnosis mainly depends on the absence at first of the general inflammatory symptoms. Pain there may be, acute and severe, but the rise in temperature and the excessive tenderness on pressure are absent. Some connection with the menstrual period, or with suppressed or over-profuse menstruation, is also generally found in hæmatocoele. In fact, although it is in practice too often mistaken for peritonitis, it never ought to be, if the case is seen within a few hours.

From acute ovarian or Fallopian inflammation, peritonitis can be diagnosed only by the very distinct lateral localisation of the pain and tenderness in the former, until the occurrence of exudation in the latter proves its more wide peritoneal character. Indeed, I should lay it down as a practical rule, that very strictly localised peritonitis is almost always

due to some coexisting visceral inflammation, and that acute visceral inflammation is nearly always accompanied by some local peritonitis. The history, or the sequel of the case, will alone show to which affection the greater importance must be attached.

Acute corporeal metritis, *per se*, is a rare affection. If it forms a part of a general septic poisoning, some peritonitis will invariably accompany it; if it is traumatic, the history of the injury and the clearly definable uterine site of the pain and tenderness, as ascertained bi-manually, will guide us to the right diagnosis.

The differentiation of pelvic peritonitis from pelvic cellulitis in this early stage is often impossible; but the following symptoms or signs will afford a strong clue:—

1. The formation of a distinctly resistant swelling in the pelvis, at a very early period, is in favour of cellulitis, especially if the tumour is not behind the uterus.

2. The pain on pressure in peritonitis is chiefly above the pelvic brim, and diffused, while in cellulitis it is chiefly within the pelvis, and in some one direction, more frequently in that of one iliac fossa.

3. The symptoms of nausea, vomiting, small wiry pulse, and tympanites are very common in peritonitis, while in cellulitis they are usually absent.

These symptoms, taken in connection with the history and causation of the case, will generally guide the practitioner aright in his estimate, but fortunately differentiation at this stage is not often of supreme importance. If he watch the course of the symptoms, and note the site of the subsequent exudation, he will generally be able to say whether the latter is infra- or supra-peritoneal.

Chronic Stage.—This brings us to the diagnosis of pelvic peritonitis when we have definite local exudations to deal with, which, whether watched during their progress or not, may be mistaken for other substances, abnormal in their nature or in their site. There is hardly one of these substances which are occasionally met with about the roof of the vagina (see page 7) which has not been mistaken for the exuded and coagulated lymph of pelvic inflammation, yet there are certain points which should aid us in at once eliminating most of them. The lymph of peritonitis is so poured into the interstices of the peritoneum, so glued to them, and so fixed, that whatever is freely movable, by vaginal or rectal touch, or bi-manually, may at once be set down as not coagulated peritoneal exudation. In long continued *constipation*, with frequent pain and tenesmus, I have known accumulations of hard faeces to be thus mistaken; but the educated touch will at once discover the pitting on pressure, the absence of almost cartilaginous hardness, the posterior and left lateral position of a faecal mass,—these, and the independent mobility of the uterus, will lead to an examination *per rectum*. *Retroverted or retroflexed uterus* presents a

rounded mass behind, but this is in general freely movable upwards or laterally. The sound, if there be no contra-indication, will show the passage of the uterine canal backwards into the swelling, and will elevate the organ into its place; or, if there be some fixity or much local tenderness, the bi-manual examination will reveal the absence of the fundus uteri in its proper position. Now and again a retroflexed uterus becomes secondarily involved in pelvic exudation, and fixed in its abnormal site, while the globular fundus is merged in more or less of lateral hardness; but even then, careful bi-manual examination, or probing of the uterine cavity, will place the uterine position beyond doubt, while the fixation and extended outline of the mass will often be made clear by the history of intercurrent inflammatory symptoms.

A *prolapsed or enlarged ovary* is differentiated by its mobility, by its lateral position and its relation to the uterus, and by the peculiar sickening pain on pressure. It is usually quite detached from the uterus, but even if adherent, it does not in any way surround it with a brawny collar as does the presence of lymph. The possibility of coexisting and extensive peritonitic exudation must, of course, be borne in mind; but in this case the lymph will be the evident abnormality, the entangled ovary will be matter of surmise.

Fluid collections in the Fallopian tubes, ovaries, or broad ligaments, cannot be mistaken for the solid exudations of peritonitis, and can only be confounded with its products when abscess has occurred in them.

Fibroid tumours of the uterus may sometimes require careful differentiation. Their firm attachment to the uterus, which, however, unless very large or impacted, they do not fix in its place, their clear and well-defined outlines above and below, the absence of inflammatory history, the frequent presence of menorrhagia and metrorrhagia (although these may sometimes accompany pelvic peritonitis), the direction and length of the uterine canal, and the relation of the cervix uteri to the tumour—all these points, if carefully weighed, should establish a diagnosis beyond doubt, although here also we may have a certain amount of difficulty from the occurrence of intercurrent attacks of inflammation along with fibroid outgrowths.

Bony growths of the pelvic wall are sometimes spoken of as sources of mistake, but their situation and evident fixity upon the sacrum or elsewhere, their non-interference with the viscera, except in a purely mechanical way, their intense hardness, their history and progress, and their non-penetration into any of the serous or cellular cavities of the pelvis, should entirely prevent error.

An *extra-uterine foetus* has its own special history and symptoms to guide us. A deposit of *cancer*, or less frequently of *tubercle*, in the pelvic cavity may very closely simulate the solid exudation of peritonitis,

and doubt may exist for some time as to their differentiation. The points in favour of the former are its rapid and at first often painless deposition, the appearance of malignant cachexia or of malignant growths elsewhere, the constant tendency to ascites, and the rapid increase of the mass, often without any symptoms of inflammation.

Exuded lymph, whether the product of pelvic peritonitis or of pelvic cellulitis, and blood, the product of pelvic hæmatocele, are each, when they have undergone consolidation, differentiated from other swellings upon much the same lines as those just indicated. But their differentiation from one another will be best reserved until all three affections have been under consideration.

Caution. The most severe cases of pelvic peritonitis are those which arise during the septic and inflammatory states following on delivery or abortion. In these, we have not infrequently that violent and septic form which may end fatally in a very few hours, the affection being clearly a mere part of the general phenomena of blood poisoning. When recovery takes place, it may be complete, leaving hardly a trace discernible by examination, or, in less violent but more sthenic attacks, coagulated lymph may remain in large quantity and for an indefinite time. It is not infrequent also to meet with such exudations a considerable time after delivery, and with a history of only very slightly marked and sub-acute symptoms. In many, if not most of these cases, the exudation is due, however, to pelvic cellulitis rather than to peritonitis, and presents the features afterwards to be described. Setting aside these puerperal and *post partum* cases, there are very many occasional causes of pelvic peritonitis. It may be simply an extension from inflammation of the subjacent organs, from acute metritis, cellulitis, ovaritis, &c. In a mild form it often accompanies the progress of ovarian tumours, malignant growths of the uterus or pelvis, and even sometimes of benign tumours of the uterus. A specially dangerous and not infrequent cause is the extension to the peritoneum of the poison of gonorrhœa or gleet. It is an undoubted fact that a very chronic gleet on the part of the male may give rise in the female not only to chronic but to extremely acute inflammation of the uterine annexes and peritoneum, and this should render the question of marriage under such circumstances an exceedingly grave one. I cannot endorse the terrible statistics of Noeggerath (*see* Chap. V. p. 119) as applicable to society here, whatever may be the case in New York, but I none the less urge upon the practitioner the necessity of advising the perfect cure of gleet in the male before marriage.

Pelvic peritonitis may also be caused by any of those injuries or septic inoculations which we have seen may follow on the use of tents, sounds, pessaries, or simple incisions of the genital organs, without the

most careful precautions, but in such cases it is usually the cellular tissue which is, primarily at any rate, affected, giving rise to septic phlegmon or pelvic cellulitis. In some instances pelvic peritonitis is due to cold or to mental shock, with or without sudden suppression of menstruation, just as ordinary peritonitis or pleurisy may be. The inflammation in these cases more frequently affects the peritoneum than the cellular tissue. Among the causes which may be mentioned as due to medical interference, I should not omit to notice the incautious injection of medicated fluids, or even of water, into the uterus. It must not be forgotten also that ordinary tubercular peritonitis may be very much confined to the neighbourhood of the pelvic viscera. The rupture of a pelvic abscess, of an ovarian or other cyst, of a distended Fallopian tube, or of an extra-uterine foetation into the peritoneum, or the occurrence of pelvic hæmatocoele there, however slight, will fairly complete the list of occasional causes of pelvic peritonitis. As the majority of these causes are also frequently assignable to pelvic cellulitis, it is as well to mention again, in this context, that general septic poisoning, after labour or abortion, gonorrhoeal infection, and cold or other shocks to the general system, tend more especially towards the causation of peritonitis, while local injuries, whether during labour or at other times, or localised septic poisonings, tend rather to the causation of cellulitis.

Treatment.—The treatment during the acute stage resolves itself into (1) rest of the affected parts, (2) removal of pain, (3) reduction of fever, and (4) removal of sepsis, the two latter indications being closely allied.

Quietude is obtained by keeping the patient in the recumbent position, by avoiding the use of purgatives in any form, by gently using the catheter in severe cases, and by avoiding all stimulation except in cases of severe septic or traumatic shock. There is no use in attempting to influence the situation of the lymph by changes in position. If we had it in our power, I do not know that we could improve upon nature's selection in this way.

Removal of pain is produced by the free exhibition of opiates, a practice which has not only this result, but which also tends to quiet all movements of the viscera, especially of the bowels, to aid in maintaining the general systemic rest, and, it is believed, to limit the extension of the disease. Much relief is also obtained by the application of a few leeches to the hypogastrium, and by the use of light warm poultices.

Reduction of fever is produced and maintained by antiphlogistic diet, -light broths, milk food, and the like. If the temperature runs very high, refrigeration of the surface by sponging, or even by ice-bags, tends rapidly to lower it; and, as I have formerly mentioned in speaking of metritis, many prefer to use ice to the hypogastrium from the first, instead of warm applications. There should be no vacillation, however,

between the two. Aconite, digitalis, and veratrum viride have each a tendency to lower the pulse, and, to some extent, the temperature, and may be given with good effect. I may here refer to some general remarks on antipyretics at p. 205.

The removal of sepsis may in some cases demand local measures. In all cases, after labour or abortion, vaginal or even uterine injections are called for to remove any decomposing fluids or embryonic remains, and, if skilfully given, the vaginal injections, used pretty hot, are sometimes found very soothing. In non-septic cases, complete rest is for the most part to be preferred. I fear that we have yet little power of reaching septicæmia through systemic remedies, but quinine in large doses, or salicylic acid, should have a fair trial. Mercury also, pretty generally abandoned, in the old routine form of calomel and opium, may yet be found to exert its germicide influence, as it probably does in the most chronic of zymotic diseases, syphilis.

When acute pelvic peritonitis has become subdued, and has entered on the chronic form, the constitutional treatment must be such as will, if possible, produce absorption of the exuded lymph, and means must be taken to prevent the ever-present tendency to recurrence. For the former purpose, plentiful and nutritious but easily-digested food is required, resort to the open air in the easiest possible fashion, and the use in moderate doses of the usual tonics, ferruginous and otherwise. For the latter purpose—the prevention of recurrence—the hot water vaginal injections, according to Emmet's plan, are invaluable, and the bowels should now be carefully regulated, while the patient must very slowly indeed resume her former course of life, and should remain for a considerable time *absque marito*. Blistering of the abdomen, and the application of iodine paint or liniment, are recommended by all writers, and strongly extolled by many. To be of use they must be applied unstintingly, and at the time when the acute symptoms have fairly disappeared, while the exudations are as yet not hardened in the extreme. I am sure of the fact, although I cannot entirely account for it, that iodide of potassium and bichloride of mercury, each of them, sometimes produces a marked absorbent effect, while in other cases they seem totally inert. The use of the waters of various foreign and British springs, chalybeate, iodised, or saline, is indicated here, as in the chronic inflammatory conditions of the uterus. The consideration of the treatment of purulent degeneration is reserved until we speak of pelvic abscess. All ovariotomists are aware of the immediate subsidence of peritonitis following removal of tumours, and even when nothing has been done but opening into the peritoneal cavity and thoroughly cleansing its surface, the same result has not infrequently followed. I dare not attempt, in a work of this kind, to draw any general deduction from these facts, but they are

sufficient to render it possible, or even probable, that time may lead to some means of differentiating those cases of perimetritis, acute or chronic, in which surgical treatment of this kind may be rationally followed. A very careful notation and comparison of cases, in which the desired result is thus accidentally, as it were, brought about, is required, and I hope ere long to add my quota to the collection of facts.

Pelvic Cellulitis, or Parametritis, or Peri-uterine Cellulitis.

By this we mean an inflammation confined to the cellular tissue of the pelvis. Technically, the term is still more restricted: for, although psoas, iliac, and lumbar abscess may involve the inflammation and suppuration of certain portions of the pelvic cellular tissue, it is only those inflammations, unfortunately of very common occurrence, which primarily attack the loose tissues around the supra-vaginal neck of the uterus, or between the layers of the broad ligaments, or occasionally between the utero-sacral ligamentous folds, which are understood to be meant. From this point of view the term peri-uterine is not inappropriate. In describing pelvic cellulitis, it will be found that practical utility leads us to base our description to a large extent on stating where it differs from that which we have given of pelvic peritonitis. Probably the cellular form is the more common, if we consider only the cases met with in ordinary gynecological practice; but if we include obstetric practice, the balance will be somewhat redressed as concerns the severe and clearly-diagnosed cases, although the number of slight cases of cellulitis which follow on tears of the cervix uteri or perineum might, if recognised, tend to restore the preponderance of that form of pelvic inflammation.

Pathology.—Inflammation of these parts follows the course of ordinary phlegmonous inflammation, and may terminate in resolution, cicatrization, suppuration, or sloughing. The most common site of this process is at one side of the cervix uteri, from which it extends between the layers of the corresponding broad ligament. Hence a common diagnostic mark of cellulitis is its lateral character. But both sides may be similarly and simultaneously affected, or the attack may originate in or extend to the tissue between the bladder and uterus, or behind, between the layers of the utero-sacral ligaments. There are various knotty points, still undetermined, with regard to the precise localisation of pelvic cellulitis. The earnest student, when he has time, will strive to make the best he can of these, by reference to the works I have named and to others, but the simple facts now given cor-

respond with all clinical experience. I have asked one or two very experienced anatomists the simple question whether there is really any cellular tissue between the layers of the broad ligament at all, and by each one I have been assured that he could not answer the question except by reference to gynecological literature. A similar amount of ignorance, or at any rate of divergence of opinion, seems to exist with regard to the absorbent glands and ducts met with in the pelvic region, but sufficient is known to warrant the opinion of Munde that many of the slighter attacks of cellulitis are really confined to the absorbents within the pelvis. Displacement of the uterus is found in pelvic cellulitis, as in peritonitis, although slight amounts of either may fail to produce it. Its usual direction corresponds with what might be expected from the facts now given. It is rarely, if ever, fixed centrally. It is very rarely, if ever, pushed forwards and downwards as a whole. Most commonly the cervix is pushed to one side, and the whole uterus is also displaced laterally, but it is more frequently latero-verted or latero-flexed than laterally displaced as a whole. It may be pushed backwards against the sacrum, or its cervix may be pushed or pulled in that direction, while its fundus bends over in front, or the cervix may be dragged forwards at an acute angle to the fundus, also bent forwards (fig. 133, No. 6).

Symptoms and Signs. The general symptoms of acute pelvic cellulitis are those of cellular inflammation in any other region—rigors, quick pulse, and high temperature. These symptoms differ from those of peritonitis only in their varying average frequency or predominance. Rigors are more common, the pulse is often less rapid, the temperature ranges higher except in violent septic cases, as it does generally in parenchymatous as compared with serous inflammations. Nausea, vomiting, and tympanites are seldom present; these symptoms point rather to affections of the peritoneum. Severe pain is more often absent than in peritonitis, and tenderness on pressure on the abdomen may be absent, but it is very marked at some particular point on vaginal examination, generally laterally. There is often considerable dysuria, and there may be tenesmus, owing to pressure on the bladder or rectum by exudation, or to sympathy. As with peritonitis, there are cases in which the acute symptoms are almost perfectly latent, or where they are so slight and obscure as not to lead to investigation in the early stages.

The physical signs are those arising from the exudations and displacements mentioned above. Very early on, the seat of inflammation is detectable, both by the acute pain produced on examination, and by a sense of puffiness and swelling. The effused lymph or serum cannot recede before the touch as in peritonitis. Bimanual examination may be impossible in the more acute stage without the aid of anæsthesia, but it will, by and by, disclose the existence of a tolerably defined swelling.

which becomes harder as inspissation goes on, or softer if purulent degeneration take place. In an ordinary or typical case the position and relations of the swelling are characteristic. Douglas's pouch is not affected, although some exudation may be felt laterally and behind, in the direction of the uterosacral ligaments. An examination by rectum makes the situation of this more plain. But the most frequent site of exudation corresponds with that of the broad ligament, stretching laterally from the uterus, and seldom leaving an interspace between that organ and itself. In very many cases it is quite unilateral, or, if it exists bi-laterally, it is in quite different proportions. In front of the uterus a mass is often discernible, either alone or in combination with the lateral swelling, and in slight cases we may have only an isolated nodule or two in one or other of the situations now indicated, the result of limited local injury and lymphatic absorption. The other signs are derivable from the changes produced in the position of the uterus, and these have been sufficiently indicated above, but it is worthy of notice that in cellulitis the fixation of the uterus is often less complete than in peritonitis, although, owing to the comparative freedom of movement on one side, its displacement may be greater. One symptom when it occurs, as it not unfrequently does, is



FIG. 202. Lateral Exudation in Pelvic Cellulitis.

very characteristic of pelvic cellulitis and, less so, of intra-cellular hæmatocele, namely, retraction of the thigh on the affected or chiefly affected side. It may almost be considered as differentiating these affections from the corresponding intra-peritoneal affections. In fig. 202 we have an illustration of the most common form of exudation in pelvic cellulitis.

Diagnosis.—Sufficient has been said above to indicate the lines of differentiation between the peritoneal and cellular forms of disease, when their exudations are fully formed or stationary, and when we have not, as sometimes happens, a combination of the two affections. In the post-puerperal period, the exudations of cellulitis, or even of peritonitis, are often masked by symptoms of so general a character that they are apt to be overlooked, unless very carefully watched for, and there are few cases in which a fresh observer, called in consultation, more often excites the chagrin of the regular attendant, than by indicating to

him these unobserved morbid conditions. To be forewarned is to be forearmed. The following conditions may be mistaken for the results of pelvic cellulitis :—

Hæmatocele of intra-cellular character and small extent can only be differentiated by its history, and, when chronic, the diagnosis is corroborated if the swelling is less unilateral, the uterus pushed less laterally, and the vagina more occluded than is common in cellulitis. The tumour in hæmatocele is more likely to be soft at first, gradually hardening, while an opposite condition is too often found in cellulitis.

Focal masses are distinguished by their posterior site and by the methods of examination so often previously referred to.

Ovarian swelling or Fallopian distention are frequently very difficult to differentiate. Their lateral position, tenderness, and frequent accompaniment by inflammatory symptoms add to the difficulty, while their mobility, when it is retained, is, on the other hand, highly differential.

Extra uterine pregnancy is more likely to be mistaken for the products of peritonitis than for those of cellulitis, for, although more or less unilateral, it can generally be ascertained to be supra-peritoneal.

Fibroid uterine tumours are nearly always open to the same remark, but a small fibroid of the upper part of the cervix, especially in front, would closely simulate the physical signs of ante-uterine cellulitis. A hasty diagnosis of such a case might very probably be erroneous, but careful study of the history, and a little patient watching, would prevent mistakes.

Pelvic abscess is most frequently only a sequel of cellulitis. The differentiation that would be required would be one of the real causation of the abscess (*see below*).

Uterine Flexions.—Retroflexion has already been referred to as a source of error in regard to peritonitic exudations. It will seldom simulate those of cellulitis, which never occupy Douglas's pouch, and only occasionally the interspaces in the utero-sacral ligaments. Ante-flexion is a more common source of error, only to be settled, unless the uterus is freely mobile, by careful bi-manual examination. I have already stated elsewhere that very sharp ante-flexion, the cervix rather than the fundus being bent forwards, is, unless in the case of very evident infantile uterus, most frequently due to ante-uterine cellulitic contraction, although the bulk of the exudation may have passed away. Lateral flexions are almost certain to be mistaken for cellulitic deposit, unless the sound and bi-manual examination be carefully employed. If fixed, the causation is almost certainly cellulitic.

Malignant nodules in the pelvis might easily be mistaken for cellulitic deposits or septic enlargement of the pelvic absorbent glands, but uterine cancer is almost always present as an antecedent, and presents its usual symptoms, local or general.

It will be well to insert now, in tabular form, the main differential points between pelvic peritonitis (perimetritis) and pelvic cellulitis (parametritis):—

A. PERIMETRITIS.

1. *Causation*.—Many causes common to both. General shock, general septicæmia, and gonorrhœa more frequent.

2. *Acute Symptoms*.—Temperature high in general septicæmia, lower in slighter forms. Pulse rapid. Pain severe, diffused, abdominal. Tenderness chiefly hypogastric, rarely lateral. Vomiting and tympanites common. Both thighs sometimes flexed.

3. *Local Swelling*.—Fluid, and almost indistinguishable at first. Site, all around the uterus, but tending to distend Douglas's pouch asymmetrically behind. Subsequent extension upwards into peritoneal cavity.

4. *Uterus* fixed early in normal position or pushed forwards.

5. *Cervix* may be normal, or apparently shortened behind or all round.¹

B. PARAMETRITIS.

1. *Causation*.—Local injuries, especially in labour, sepsis from local affections or surgical proceedings more common.

2. *Acute Symptoms*.—Temperature averages higher. Pulse varies. Pain often less. Tenderness chiefly pelvic, generally lateral. Vomiting and tympanites absent. One thigh often flexed, afterwards adducted or abducted.

3. *Local Swelling*.—Distinct intra-pelvic swelling almost from the first. Site varies, never symmetrical behind uterus, most often in one broad ligament, or at isolated points, e.g., behind bladder, in one utero-sacral ligament, or in pelvic glands. Extension occurs along course of connective tissues.

4. *Uterus* generally displaced laterally, often flexed, fixation sometimes less complete.

5. *Cervix* often apparently shortened at one side.¹

Causation.—As has been already stated, pelvic cellulitis may take its rise in any of the causes which are also assignable to peritonitis, but in mentioning these I endeavoured to distinguish which of them were more commonly followed by the one or the other form of inflammation. Local injuries and local mal-practice certainly cause cellulitis more frequently, systemic shocks, as from cold, &c., peritonitis. Labour or abortion may give rise to either or both, while gonorrhœal extension is much more frequently to the peritoneum.

Treatment.—Whatever may be the difficulties occasionally encountered in differentiating between peritonitis and cellulitis, such difficulties can hardly be said to affect the question of treatment to any very great degree. I have read a good many elaborate descriptions of the treatment of both affections by the same writers, and I have never been able to detect any noteworthy difference except in the different order or perspicuity with which each step was mentioned. I have nothing to add to the treatment given at p. 491, except to say that abdominal incision is out of all question here, at any rate in the absence of suppuration with rupture or threatened rupture into the peritoneal cavity. Perhaps

¹ This apparent shortening is due solely to the presence of exudation depressing the vaginal fornix. Its situation in either case is thus accounted for.

we may also say that in slight attacks of cellulitis there is an especial necessity for looking for, and treating antiseptically, any local sources of infection about the perineum, vulva, or vagina.

Pelvic Hæmatocele.

Of all the unfortunate mistakes which I have seen in practice, perhaps none have been more disastrous than those which involved the overlooking of this affection. The knowledge of its frequent occurrence, and of its well-marked symptoms, does not seem to have sufficiently permeated the profession; and I think I may say that, in a considerable majority of the cases which I have seen in consultation, the patient was being treated for something else, while, nevertheless, the mere whisper of the name was often sufficient to make plain to the practitioner the whole state of the case.

Effusion of blood, either above or below the pelvic peritoneum, constitutes the essence of the disease, although purists object to the term being applied in the former case until the effusion is fixed in its place by firm coagulation or surrounding inflammatory exudations. It is quite true that blood from a ruptured liver or kidney might trickle down into Douglas's pouch, and yet would not strictly constitute a pelvic hæmatocele, but if the hæmorrhage ceased without fatal result it would speedily assume all the characters of one, or, if we had no clue to the source of hæmorrhage, it would be impossible to assign any other name to it. The nomenclature of the disease is as complicated as that of pelvic inflammation. We might speak of peri- and para-uterine hæmatocele as, following Virchow and Matthews Duncan, we do of the corresponding inflammations of the peritoneum and cellular tissue respectively, or we may term the former retro-uterine, from the position of its exuded lymph in Douglas's pouch, and we may speak of the latter as pelvic thrombus, but I prefer to retain the distinguishing terms of intra-peritoneal and intra-cellular hæmatocele. I believe, however, that it will best serve practical ends if we treat of the two forms of blood-extravasation a little more in common than we have done in the case of peritoneal and cellular inflammation.

Pathology. The source of the hæmorrhage, and its accompaniment of diseased ovary, uterus, Fallopian tube, &c., will be discussed under the heading of causation; for hæmatocele is in reality only a result or a symptom of disease in some pelvic or neighbouring organ. From whatever source the hæmorrhage comes, its course is determined on precisely the same lines as that of inflammatory fluid exudation.

If intra-peritoneal, Douglas's pouch is first filled, then gradually, in severe cases, the uterus is surrounded or over-topped, the effusion reach

ing the abdominal wall. Fig. 201 represents this, and will serve to illustrate intra-peritoneal hæmatocele as well as pelvic peritonitis. In hæmatocele, however, the uterus is rarely arrested in the centre of the exudation and glued there, but is rather pushed forwards towards the pubes and afterwards fixed in that position. In a case of doubtful diagnosis I should consider central fixation of the uterus, with free exudation of either blood or lymph, both in front and behind, as strongly in favour, although not conclusive, of its being lymph. In certain cases it happens that the intra-peritoneal exudation of lymph or of blood hardly affects Douglas's pouch at all. This may occasionally be due to congenital deficiency of the pouch, but more often to its obliteration or closure by previous inflammatory attacks. The phenomenon is certainly more common with hæmatocele, and this accords with the view that peritoneal adhesions often precede hæmatocele and serve as restraining media to prevent its extension or limit its bounds.

When the effusion of blood is intra-cellular it takes much the same variety of courses as the swelling in cellulitis, into the lateral interspaces, extending from the uterus between the broad ligaments, or in other directions where loose cellular tissue allows of its progress. It is, however, from its invariable fluidity at first, much less disposed to be predominantly unilateral than the exudation of cellulitis. Sometimes the distention is so great as to lift up the peritoneal covering of the pelvis to a very considerable extent, and so to simulate very closely the swelling caused by intra-peritoneal exudation or effusion. In such cases the fundus uteri may even be felt centrally from above the pubes, while the solidified effusion rises to a higher level on each side.

The changes gradually undergone by the blood are not always alike. It may remain fluid or semi fluid for a considerable time, and, especially if meddlesome treatment is employed, it may pass into the condition of pus, with hardly any coagulation. Much more generally, however, coagulation occurs, and the mass acquires in time an almost stony hardness, this being followed, as in inflammatory exudation, by gradual and more or less complete absorption, or by limited suppuration and pelvic abscess.

When intra-cellular, the limitation and encystment of the effusion are brought about by the natural limits of the intra-cellular spaces, and by the peritoneal covering above, except in those rare cases where peritoneal rupture takes place and the hæmatocele partakes of a mixed intra-peritoneal and intra-cellular character.

When intra-peritoneal from the first, the fluid also becomes encysted, and is not found, after death, free in the peritoneal cavity, unless in cases of almost immediate destruction of life. This encystment is caused by

inflammatory adhesions of the peritoneum itself, and not by coagulation of the surface. By some it is supposed that these adhesions are always pre-existent, and doubtless this is often the case, owing to disease of the pelvic viscera, which is also the cause of the hæmorrhage. But when we consider how rapidly peritoneal adhesion occurs, as for instance after abdominal incisions, how frequently, if not universally, the shock of hæmatocele is soon followed by pulse and temperature signs of inflammation, and how improbable it is that an ovary or Fallopian tube will never rupture upon a perfectly free surface, we must be compelled to believe that the investing adhesions are, very often at least, secondary. The intestines are sometimes involved in this capsule of lymph.

Symptoms and Signs. All that has now been said tends to show that the mere physical signs of hæmatocele, when its exudation is complete, differ but little from those of inflammation. In hospital practice we meet with numerous cases where the absence of any clear history renders it impossible to pronounce with certainty upon the original character of the disease. The more constant tendency of an intra-peritoneal blood mass to push the uterus much forwards and to rise quickly in the shape of a large supra-pubic tumour is worthy of notice, but is certainly not pathognomonic. In the intra-cellular form strictly unilateral exudations are more probably inflammatory, but deposits confined to the front of the uterus may be either inflammatory or hæmorrhagic.

With these remarks the student is referred to what has been said before on the physical signs of pelvic inflammatory exudations.

The symptoms, however, which accompany the onset or progress of a hæmatocele are, in typical cases, highly characteristic, and it is to these that we must often look for differentiation, although the physical signs may lead to a closely approximate diagnosis. It is undoubtedly the case that not infrequently slight hæmorrhages occur into the peritoneum with few or no characteristic symptoms. No one can study the physiology of ovulation and menstruation without being satisfied as to the great probability of this. If every unfertilised ovum, every little hæmorrhage from a Graafian vesicle, and every escape of blood from an engorged Fallopian tube, which found its way into the peritoneum, gave rise to alarming symptoms, female life would hardly be worth living. Small callosities in Douglas's pouch or behind the broad ligaments resulting from this cause, if accidentally discovered, can hardly be differentiated from those which may have resulted from slight inflammatory attacks. But hæmatocele, whether intra-peritoneal or intra-cellular, of any considerable extent, is accompanied by sudden acute pain in the pelvis or lower abdominal regions, and by a certain amount of rapidly occurring shock to the system. The pain is characterised by its suddenness, by its most frequent, although not invariable occurrence about the

menstrual period, by its very frequently following on some kind of unusual exertion, and, above all, by the absence, for some time, of the symptoms of inflammatory fever. If these points only were borne in mind we should not meet with those frequent disastrous cases where acute pain of the kind is at once treated as inflammatory, by means of hot poultices. Three times I have seen this occur in the families of medical brethren, twice with fatal results.

The systemic shock shows itself, according to its degree, by a mere feeling of faintness or exhaustion, by a small and compressible, although perhaps quick pulse, by lowering of the general temperature, or by the utmost degrees of fainting, vomiting, general coldness, rapid pallor, pulselessness, and hiccup, in fine, by every symptom which is only too familiar to the obstetric practitioner as a result of internal hæmorrhage. When several of these painful and depressing symptoms are present in any woman, the practitioner should never lose sight of pelvic hæmatocele until he has found some other clear cause for them. If the symptoms are very marked, and if he possesses a delicate sense of touch, the soft bulging, *puffy* condition of Douglas's pouch, or a more distinct sense of encysted fluid in some part of the pelvic cavity, will confirm his suspicions, and lead to immediate anti-hæmorrhagic treatment. I cannot agree with those who maintain that even free hæmorrhagic exudation into the peritoneum cannot be ascertained with moderate certainty by vaginal touch. I can, at any rate, recall no such case, since I first made gynecology a special study, in which I have not felt absolutely sure of its existence, and demonstrated it to the practitioner in attendance. With moderately large exudations of blood, the evidences of their pressure on surrounding structures are seldom absent. A feeling of something to be expelled from the pelvis by straining, tenesmus of bowel, bladder, uterus, or vagina, with difficult, obstructed, or completely prevented action of the bladder or bowel are met with. These symptoms are very similar to those we meet with in sudden retroversion of the gravid uterus, and if pregnancy exists, or if coagulation has rapidly occurred behind the uterus, simulating the retroverted fundus, the differentiation may be difficult to those who are unfamiliar with bimanual examination. I have on more than one occasion found practitioners diligently endeavouring to push up a mass of retro uterine clot, under the impression that it was the retroverted fundus of a gravid uterus, while they might easily have traced bimanually the connection between the cervix in the vagina and the fundus just behind and above the pubes. Many cases of hæmatocele are accompanied by free metro-rrhagia, a circumstance often owing to the fact that the causation is due to something interfering with the menstrual phenomena at the time, but it is not safe to lay too much stress upon this as a diagnostic symptom,

metrorrhœgia may depend on or accompany so many other affections, and is so frequently absent in this.

If the cause be not seen for twelve or twenty-four hours, other symptoms arise which, although they are a natural and almost a constant sequel of the hæmorrhage, render its diagnosis from inflammation difficult or impossible. Inflammation of a secondary character has, in fact, set in, and we have seen how necessary this is, in intra-peritoneal cases, to secure the localisation of the blood mass. Chills or rigors, elevation of temperature, tenderness on pressure above or below, show that the inflammatory process is at work, and only the most careful estimate of the primary symptoms, unless they were very marked, will enable us to tell whether the febrile symptoms and the observed physical signs of exudation are those of pelvic inflammation, pure and simple, or of this grafted on to a hæmatocele. In hospital practice the hæmatocele cases are nearly all of this character, and one can hardly help a feeling of humiliation in being compelled so often to commence one's clinical observations in the same strain of doubt as to whether the case should be tabulated as one of pelvic hæmatocele or of pelvic inflammation.

The course of the disease is very varied. Death in a very short time often occurs in the intra-peritoneal cases. If *post mortem* examinations were more common in private practice than they are, this would be speedily apparent. Inflammation of some indefinite character gets the credit of many of these rapid deaths. Hospital practice, so valuable in most instances, is of no use here as an educator. Patients do not come in in anticipation of a rapidly fatal hæmatocele, and the cases of hæmorrhage that are admitted have passed the first and more dangerous stage. When the tumour, if intra-peritoneal, has become encysted by inflammatory exudation, or if it is intra-cellular, it may undergo from time to time, especially at the menstrual periods, accessions of bulk from renewal or continuance of its causes, but a time comes, if the patient is kept at rest, when these cease, and if the practitioner will keep his surgical talents in the background, and will refrain from puncturing or incising the effused mass, it will generally disappear by absorption. Suppuration, with escape of blood-clots and pus, will now and again occur, and must be treated as any other case of pelvic abscess, but in my experience, if the case is treated with masterly inactivity, as regards surgical interference, this termination is very rare. In chronic hæmatocele, a term seldom used, although clinically correct, as in chronic pelvic peritonitis, it is essential to remember the fact that a long period of rest must be allowed for subacute exacerbations, before adopting hygienic means which leave these out of account.

Diagnosis.—We have already described the sudden pain and shock, followed by definite signs of pelvic exudation, and intercurrent attacks

of inflammation, sufficiently to enable us to say, with very fair certainty, when a pelvic hæmatocele has occurred. As regards differentiation from other affections, we must, as with pelvic inflammation, decide, first—what can be mistaken for it while it is recent, and while it has given rise to no definite physical signs—and, secondly, how far its permanent or long-existing physical signs can be mistaken for other organic affections of the pelvis.

Pelvic hæmatocele may, in its earliest stages, be mistaken for *peritonitis* or *cellulitis*, a mistake which should be avoided by careful observation of the pulse, temperature, and other symptoms denoting the presence or absence of acute inflammation of any kind, and in grave cases by noting the difference between the sudden shock of loss of blood and that of commencing acute inflammation. In the case of cellulitis, as in hæmatocele, there may be distinct pelvic tumour from the commencement, but that of the latter affection is soft and fluctuating from the first, and gradually hardens, while that of the former may be, and generally is, pretty dense and moderately firm from the beginning. *Sudden retroversion of the uterus*, especially of the gravid organ, often presents, as we have seen, very similar symptoms to those of hæmatocele, but bi-manual examination will at once correct any mistake, and, although sudden pain, shock, and pressure on the bladder or rectum may be similar, the signs of internal hæmorrhage are absent.

The bursting of an *extra-uterine embryo* produces hæmatocele in its most violent and fatal form. To speak, therefore, of the differentiation of the two affections is hardly correct, but in any case of serious pelvic hæmorrhage, it is of great importance to decide, if possible, whether extra-uterine pregnancy is present or not. The history of pregnancy, combined with the bi-manual discovery of a non-gravid uterus, the presence, at the very commencement, of a definite tumour, before much coagulation could have occurred, the knowledge, if it is attainable, whether such tumour existed before the shock took place, and the power of making out any unmistakable portion of a foetus, are the points on which we must rely for a decision. In the case of a very early embryo, its existence may be only a matter of surmise, and quite incapable of demonstration.

The differentiation of intra-peritoneal from intra-cellular hæmatocele, in slight cases, may be impossible at the first, and can only be made where physical signs have become marked, but a localised pelvic tumour at a very early stage, which is not in Douglas's pouch, and which, although soft, does not completely recede on pressure, is distinctive of the intra-cellular form. The intra-peritoneal form must be more strongly suspected when the attack occurs during a menstrual period, and in most cases when it is violent, and leads to much collapse, where

general peritonitis follows, or where there are frequent recurrent attacks.

In its later stages, when all hæmorrhage has ceased, when such shock as may have followed has passed away, when secondary inflammation has ceased, and when nothing remains but a history to be investigated, and physical signs to be estimated, the differentiation of the results of hæmatocœle from other conditions is difficult and often impossible. From the exudations of *pelvic inflammation*, physical examination alone cannot now give any positive assurance of differentiation. If the history is clearly distinctive, we may rely on it, if not, we must be content to remain in doubt, although fortunately such doubt has little if any influence on treatment. The exudation may be mistaken for *fibroid outgrowths* of the uterus, especially of its posterior wall, for *ovarian tumour*, or for some of the rarer forms of *uterine congenital malformations*, for *chronic uterine displacements*, especially retroflexions, for a still advancing *extra uterine foetation*, or for *cancer* of the pelvis. The symptoms and signs of each of these have been mentioned in their appropriate places, and must be recalled to memory in making a diagnosis. If this be done, mistakes of an important kind will seldom be made. The immobility of the mass will itself differentiate it from the majority of these sources of error—from fibroid growth, displaced uterus, or ovarian tumour. We cannot poise upon the finger, or move about bi-manually, a firm pelvic exudation of blood or lymph, as we can all of these, unless fixed by accompanying inflammation. Extra-uterine foetation has its own special history, and pelvic cancer has its own cachexia and constant pain, its absence of sudden supervention, and the frequent coexistence of ascites, to guide us.

The diagnosis of intra-cellular from intra-peritoneal hæmatocœle, in this stage, and so far as it depends upon physical signs, has been sufficiently indicated, and differs little from that between parametritis and peri-metritis.

Prognosis.—An almost immediately fatal result is apt to follow intra-peritoneal hæmatocœle when it is caused by the rupture of an extra-uterine embryo or of any very vascular structure. This may sometimes be averted by steps afterwards to be described, if the true nature of the case is diagnosed in time. When hæmorrhage has ceased, and the patient can be rallied, encystment of the clot by inflammatory exudation speedily follows. There is still a risk, especially at the first following menstrual periods, of renewed and fatal hæmorrhage, but this risk gradually lessens as the ruptured parts become sealed by adhesion. Once rendered quiescent, the extravasation, if large, may burst into the rectum, vagina, or elsewhere, discharging clots, suppurating, and ultimately killing by septicæmia or exhaustion, or gradually performing a

natural cure. I have, however, rarely seen a case where, if it was left alone, this result in spontaneous rupture occurred. Suppuration before rupture, and subsequent abscess, is another occasional sequel, also, in my opinion, too frequently the result of injudicious aspiration or other manipulation. As a rule, the mass hardens more and more until it is completely solidified, and then, under judicious hygienic treatment, is gradually absorbed. Small intra-peritoneal extravasations undoubtedly get well, frequently without diagnosis or treatment. Intra-cellular extravasations rarely end in sudden death, but run the same course of slow absorption or ultimate suppuration and abscess as the exudations of pelvic cellulitis.

Causation. We have already spoken of hæmatocele as, strictly speaking, not a disease, but as a symptom of disease in various organs, which may lead to the extravasation of blood. In practice, and for the purposes of treatment, we cannot, however, entirely maintain this view. It is with the extravasation and its results we have to deal—the causes are often only surmisable, and still more often are beyond our reach, at any rate until long after the attack. Still, it is most desirable to know what circumstances may lead, in various cases, to hæmatocele, and for the purpose of prognosis, or occasionally of treatment, to try to estimate which of these is most likely to be the efficient one in the particular case. No doubt a certain number of cases are wholly or partially due to a predisposing condition of system—to purpura, hæmophilia, or the hæmorrhagic diathesis, or to chlorosis and other diseased conditions of the blood or general vascular tissues. I think I have distinctly observed a tendency to this affection in those of strumous habit. The menstrual period, with its increased vascular tension, may also be looked upon as a predisposing cause, as may every disease of the pelvic organs which leads to permanent or occasional hyperæmia of the tissues, sudden arrest of menstruation by shock or cold included. Among the immediate causes, we may set aside those which depend on rupture of organs within the abdomen proper,—of aneurisma, or of extravasations from congested abdominal viscera. These may certainly cause hæmatocele, but, as a rule, the primarily non-pelvic character of the disease should be ascertainable, and should lead to attempts at practice founded on this knowledge. Among the most fatal causes, although by no means the most common, is the rupture of an extra-uterine embryo, and we have already fully discussed this in its present relations (*see* Chap. XVIII.). The rupture of an ovarian tumour may also cause hæmatocele, as may that of an occluded and enlarged Fallopian tube or of a hæmatometra, due to atresia of the genital canal. In these cases the physical signs may have led to previous diagnosis, or remain sufficiently distinct to enable us now to make it. Rupture of a Graafian vesicle, or of an ovary which is the subject of cystic

degeneration, or of varicose or hæmorrhoidal utero-ovarian veins,¹ and escape of blood from the fimbriated extremity of an engorged Fallopian tube, sum up the more common causes which lead to intra-peritoneal hæmatocele; and any of these ruptures may, although more rarely, occur between the folds of the broad ligament, and so give rise to the intra-cellular affection. Among the special exciting causes of the intra-cellular variety, although doubtless they may also occasionally give rise to the intra-peritoneal, we may mention violent coitus, violent blows, or falls or efforts, or pelvic operations, chronic menstrual suppression with engorgement, giving way of pelvic adhesions, or any other cause which tends to the rupture of vessels below the peritoneum or within the pelvic cellular tissue. Most of these causes may be fairly estimated by a careful study of the history of the patient for some time previously, when time is permitted.

Treatment.—When called to a case of hæmatocele, the practitioner should endeavour to ascertain as early as possible whether it is intra-peritoneal or intra-cellular. In the most dangerous, —the rapidly fatal cases,—he will give the benefit of the doubt to the intra-peritoneal variety. If he believes that the attack is intra-cellular, he must at once abandon the idea of anything like surgical interference. Nothing that he can do will compensate for the loss of the restraining influence of the pelvic fasciæ or coverings. If the hæmorrhage is not so great as to be immediately threatening life, and if, by means afterwards to be mentioned, he can secure reaction, or arrest of further systemic depression, he must exercise the same caution, no matter where the effusion of blood may be. If the effusion appears to be intra-peritoneal, he must at once decide, if he can, the question of extra-uterine pregnancy. Upon the decision of this question will depend the further question as to how far he may fairly entertain the idea of an abdominal incision for the removal of the embryo. If it appeared certain that extra-uterine pregnancy existed, and if life was trembling in the balance, I do not think that, in the present state of surgical knowledge, any one who had a fair experience of abdominal incisions for other affections would hesitate to cut down and endeavour to remove the offending abnormality. But one who had not such experience would be justified in remembering that difficulties might occur far beyond his power to cope with, and that a patient may recover even from a ruptured embryo with the most violent hæmorrhage. If ovarian tumour were known to exist, the necessity for operation would be imperative; and if diseased and occluded Fallopian tube had been pre-

¹ In connection with this, the frequent association of hæmatocele and varicose veins of the extremities has been noted, I cannot recall to mind by whom. Considering the frequency of the latter affection, we do not gain much certainty in diagnosis by the observation.

viously diagnosed, the practice would probably be the same as in abnormal foetation. Setting aside, however, these clearly diagnosed affections, I think that in the present state of our diagnostic and pathological knowledge, and knowing as we do that so many cases have a naturally favourable termination after the immediate shock is past, all other surgical interference is forbidden. The treatment will therefore, in most instances, be confined to arresting the hæmorrhage and rallying the patient from the shock. For these purposes she is kept absolutely quiet in the recumbent position, with the head low. Cold is applied by ice-bags or bladders to the lower abdomen, while it may be necessary at the same time to apply warmth to the extremities. The local cold is kept up for several days, serving the double purpose of a local astringent and of an antipyretic. Three drugs are especially of service, all of which may be administered subcutaneously — morphia to relieve pain, ergotine as a vascular styptic, and sulphuric ether as a diffusible stimulant. Alcohol in one of its forms must be frequently administered by mouth or rectum as long as the temperature is sub-normal; but it must be remembered that a patient can no more live and acquire strength on alcohol alone, than a horse can upon the free use of the spur. Milk, eggs, or peptonised meats must therefore be administered in combination. Transfusion of blood, serum, or saline solutions, may be tried with occasional success, as in hæmorrhage after labour; but cases sufficiently severe to indicate its use are too often beyond its reach ere the means can be employed. As the patient gradually rallies, all stimulants must be withdrawn, and she must be kept on light nourishing diet, while perfect and continuous rest is enjoined for many weeks. Especially must this be observed at the succeeding menstrual periods, for some months.

Next comes the question, how to get rid of the stationary exudation, sanguineous and inflammatory, which remains. Whatever you do, do *not* try to accomplish this surgically. In the early days of our knowledge of the affection, it was supposed to be absolutely necessary to evacuate the mass of blood by vaginal incision. I saw a few cases thus treated in Edinburgh about 1855, and the patients all died miserably of septicæmia or hæmorrhage. If the covering gives way spontaneously, and the clots begin to escape *per vaginam* or *per rectum*, it is not our fault. Nature will have made some provision for this in a way we cannot, and all we can do is to avoid external septic communication. Everything that has been laid down for the treatment of chronic inflammatory pelvic exudations applies equally here, and nothing but the undoubted occurrence of abscess, or of violent septicæmic symptoms, will justify us in using other remedial means of a surgical character. Even aspiration by needle, as a means of diagnosis from abscess, is not, I think, warranted, unless the latter occurrence is almost absolutely

certain, and as a prelude then to more free evacuation. I am not unaware that many cases are still treated by incision by leading authorities in the profession, and with what they consider as favourable results on the whole. In these days of antiseptic treatment this is possible, but as every case of hæmatocele which I have seen for over twenty years (and they have been exceptionally numerous, although I cannot tabulate them) which did not die from immediate hæmorrhage, has perfectly recovered, with suppuration in only one instance, it is impossible that better results could have followed the bloody operation of incision, and I am justified, I hope, in thus speaking somewhat dogmatically.

Pelvic Abscess.

Pelvic abscess, apart from the lumbar, psoas, and other abscesses which have distinct clinically-recognised origins outside the pelvis, may arise in rare instances very obscurely, but it may safely be considered here as a mere sequel to certain diseases, of which pelvic cellulitis, peritonitis, or hæmatocele (especially the first-named) are by far the most common, although it occasionally results also from suppuration of an ovarian tumour or extra-uterine embryo, from ovaritis or salpingitis, or from breaking down of tubercle.

The *symptoms* which point to the occurrence of suppuration are those met with in suppuration of other parts. Rigors, high but fluctuating temperature, throbbing, increase of pressure on surrounding parts, with tendency to hectic and profuse sweating, become engrafted on the former symptoms of disease, with more or less severity according to the acuteness of the suppuration. On examination, a soft fluctuating swelling is felt through the vagina or rectum, and is often clearly deniable by bi-manual examination. The situation of the swelling is determined by the situation of the pre-existing disease. In most instances this soft swelling will have been found to be preceded by comparatively hard exudation. More especially will this be the case when cellulitis is the originating cause. The soft fluctuating point may be central, among a mass of still hard exudation, in the case of hæmatocele or pelvic inflammation; or it may, as in suppurating ovary or Fallopian tube, present no hardened circumference at all. If the progress of the case has been carefully watched, and if the general symptoms of abscess are present, there can be little doubt as to the *diagnosis*, but in the absence of previous observation of the case, there may be doubt as to whether we have abscess to deal with, or the fluid, although not yet purulent, contents of a hæmatocele, pelvic peritonitis, or other affection. In such cases the aspirating needle will decide the question, but its indis-

criminate use may provoke suppuration where it did not exist, and it is advisable not to have recourse to it unless abscess is almost certain, or ovarian or other pelvic disease requiring immediate interference is present.

*The natural progress of a pelvic abscess is to find an outlet for the discharge of its contents. In acute cases it may do this rapidly, and the less interference there is, the more safely; in chronic cases there is often prolonged suffering and weakness. The site of the exit depends on a variety of circumstances, —on the thickness of the surrounding exudation, the position of the fluid as regards the pelvic fasciæ, and other less obvious causes. But however complete our anatomical knowledge of the structures or tissues involved, we can seldom predict where a pelvic abscess will burst, until the process is well nigh complete. The rectum and vagina are the most usual sites, although it is often extraordinarily difficult to find the exact spot from which immense quantities of pus escape. The bladder is unfortunately sometimes selected, the uterus rarely. The small intestine is sometimes pierced, and on the other hand the perineum may be reached. The abdominal wall above the pubes, or in the groin, above or below Poupart's ligament, is a not very infrequent point of exit. Sometimes the matter burrows into one of the pelvic notches, causing intense pain like sciatica, and producing contractions of the thigh which have led to serious mistakes in the hands of those unaccustomed to gynecology, and lastly the fluid may burst into the peritoneum with immediately disastrous results. The abscess may, even if single, have a double exit, still more so if there are separate *fori*. Every form of spontaneous bursting is liable to be followed by reclosure of the opening, and repeated outbursts, either in the same or other directions. Rapid death from pelvic abscess is not common unless the peritoneum be entered, but by wearing out the strength of the patient it may lead to tuberculosis, renal disease, or other diseases of malnutrition, or by the occurrence of embolism or septiciæmia, it may at any time cut short the life of the patient.*

Treatment.—Given a pelvic abscess of the kind now indicated, the practitioner will, of course, support the patient's strength while deciding what further can be done, and he will probably, by the use of quinine or the salicylates, endeavour to keep down hectic fever. If necessary he will also not scruple to use sedatives. Beyond this he has only two courses before him,—to leave the issue to nature or to promote evacuation by art. But the choice, although not varied, is often difficult in the extreme, especially as regards the question of time. In any individual case one might find little difficulty in assigning reasons for one course or the other, but it is a very serious matter to lay down any general rules in answer to the questions, When should you

leave a pelvic abscess to nature, and where or how should you evacuate it? By leaving it too long we exhaust the strength of the patient, and run the risk of its bursting into the peritoneum or forming numerous fistulae in opposite directions. By evacuating too soon we run the risk of cutting into parts which are unprepared to prevent the lateral circulation of the pus into the cellular tissues or peritoneal cavity. I should say that, whenever the evidence of pus, and of its pointing in a given direction, is clear and undoubted, nature will have prepared the tissues for evacuation, and this should be at once brought about by art in the direction indicated. When there is any doubt on the point it is better to wait, or to employ the aspirating needle, but to adopt the latter course only when the evidence is very strongly in favour of the existence of pus and of pointing of the abscess. The mode of evacuation will vary according to the point which nature indicates as the desirable one. If the groin or abdominal wall is clearly threatened, the ordinary surgical methods of opening an abscess by incision, with antiseptic precautions, drainage tube, and subsequent antiseptic injections, meet every want. When the vagina, the favourite point of exit, is invaded, the wall may be explored with the aid of the duck-bill speculum and incised at its thinnest part, or a good sized trocar may be used. In either case an india-rubber drainage tube or a winged elastic india-rubber male catheter should be inserted. A very great improvement in the ordinary drainage tube consists in having it unperforated, at least beyond the wall of the abscess, using one of considerable length and calibre, and inserting a glass bend, which acts as a syphon trap, at some portion of its length (*see paper by Dr G. R. Robertson, Medical Chronicle, November 1884*).

For the rectum the trocar is necessary, carefully guided by the finger to the prominent point, while withdrawn within its cannula, and if possible a drainage tube should be inserted here also for a short time. If there is a doubt as to whether the vagina or rectum is most clearly threatened the former should have the benefit of it, as the site most amenable to subsequent antiseptic precautions. Evacuated in any of these ways, a pelvic abscess will sometimes heal up rapidly, but most frequently it has a constant tendency to refill. The drainage tube obviates this to a certain extent, but after a few days have elapsed the rapidity of healing is greatly enhanced and the danger of septicaemia is equally diminished by washing out the cyst with 1 in 40 carbolic solution, or with weak iodine solution. If a double cannula can be introduced through the opening, the washing may be thus effected, or the drainage tube may be utilised if it is not laterally perforated. In the rare case of abscess pointing in front of the vagina, the bladder must be carefully emptied before taking any steps towards evacuation, and no such steps should be taken in the absence of a clear necessity.

Abscess, confined to the neighbourhood of the ovaries or Fallopian tubes, may so far simulate abscess of those organs themselves, or so clearly have a tendency towards the peritoneal cavity, as to warrant an abdominal section under precisely the same reasoning, *pro* or *con*, as is applicable in the case of ovarian or Fallopian abscess. I have recently had quite a series of cases under my care, where, previously to admission to hospital, the abscess had burst into the bladder, giving rise to chronic cystitis and to great increase of temperature on every fresh discharge into the bladder. By watching carefully for the first indication of these rises, and then washing out the bladder with a half saturated solution of boracic acid, I have succeeded in producing what I hope will prove a permanent cure in all of them.

CHAPTER XX.

DYSpareunia, Vaginismus, Sterility.

Dyspareunia.

THE term "Dyspareunia," reintroduced by Barnes, was originally intended to cover those cases in which sexual intercourse was attended in the female by pain, but there is nothing to prevent our including under the same term those cases in which intercourse is impossible, although not necessarily painful. Marion Sims introduced the term "vaginismus" to indicate a peculiarly sensitive condition of the vulva or vagina very commonly met with, and manifested by intense pain and spasmodic contraction of the vaginal sphincter on the slightest touch. The two terms are not, therefore, quite synonymous, although they cover a good deal of the same ground. The conditions which produce painful spasm or vaginismus will, however, all be referred to when mentioning those which give rise to dyspareunia.

I propose to devote but few words to the consideration of this subject, although it is of more importance than might at first be imagined by the young practitioner. Independently of their bearing on sterility, the number of cases in which unhappiness is occasioned by obstacles that prevent the performance of the sexual function is much greater than a general practitioner of even long standing might suppose. Patients will often, from a sense of *mauvaise honte* submit for long years, or even for a lifetime, to conditions which embitter the married life in various ways, and if they are driven to consult a medical adviser they generally prefer to select a specialist, with whom they are not frequently in contact or socially intimate. Sir James Paget, in his excellent *Clinical Lectures and Essays* (1875), points out that the further we recede from the savage state the more does the sexual act become less a matter of intuitive knowledge and practice, and this applies in the highest degree to the sex which may, from this point of view, be considered the more civilised—the furthest removed from the utter sexual impudency of the brutes.

The majority, if not the whole, of the causes of dyspareunia I have

here tabulated, leaving out of the list, however, those dependent on the male, such as real or imaginary impotence, malformation of the male sexual organs, &c.

1. Frigidity of temperament.
2. Rigidity or abnormality of the hymen.
3. Neuromata of the vulva?
4. Cracks, or fissures, or chronic ulcers of the vulva, anus, or urethra.
5. Vascular caruncles or degenerations of the urethra or vulva.
6. Coccygodynia.
7. Vulvitis or vaginitis.
8. Atresia or stenosis of the vagina or vulva, congenital or acquired.
9. Chronic enlargements of the uterus, especially of its cervix, from inflammation, hyperplasia, fibroids, cancer, &c., with or without displacements.
10. Pelvic congestion from any cause.
11. Pelvic exudations.
12. Ovarian tenderness or prolapse.
13. Emotional causes, or hyperæsthesia without evident lesion.

Whatever may be the primary causes of the dyspareunia, even when it is merely due to awkwardness or timidity, if it is not soon got over, a neurotic condition of painful spasm is apt to be set up, increased with every futile attempt, and leading to a certain amount of vaginitis or vulvitis, which increases the mischief; so that the state of "vaginismus" should often be considered as an effect as well as a cause. This effect, however, does not always follow, for I not long since removed the firm circular hymen of a lady who had been married fourteen years. Both she and her husband had been aware of an irremovable obstacle, and some attempts had formerly been made at artificial dilatation, but the parts were otherwise perfectly healthy, and the wife had experienced no pain or spasm of a severe character. This was dyspareunia, not vaginismus, although the former might easily have led to the latter also.

1. Mere frigidity or absence of sexual desire, or even repugnance to intercourse, has often been alleged to me as a cause of dyspareunia. In the absence of any of the physical obstacles afterwards named, this could hardly be the case for long, unless one or both parties were peculiarly mentally constituted. It is strongly recommended by many writers that the young married woman would be much the better of a little more physiological advice from her mother than is usual in our staid and decorous British middle class society, and doubtless this is true. But I have found some such advice too often quite as strongly needed by the male partner, who too frequently gathers his ideas, at first or second hand, from impure sources, and who is often astonished, if not disgusted, to find that the sexual passion, in its grosser physical manifestations, is absent,

or only slowly and partially developed, even in a woman who may be of highly sensuous appearance, and who may also be perfectly fruitful.

2. The hymen may not only constitute a physical obstacle in itself, by its undue toughness, but may become the cause of intense vaginismus even when it appears to the eye to be perfectly healthy. I have reason to believe that the spasm may exist in the hymen itself as well as in the sphincter vaginae and other muscles connected with the perineal centre. In every case where the hymen is clearly the cause of mischief, its complete ablation, with the precautions mentioned in Chapter II., is the only certain remedy.

3. Neuromata of the vulva have been described by Simpson and others, independently of any vascular caruncle or other morbid appearance, and undoubtedly one can sometimes find a spot which is intensely painful to the touch, although it presents nothing abnormal to the eye. I have two or three times freely excised such spots, but have found no trace of neuroma such as Virchow describes, and, moreover, have produced no curative results; hence I am inclined to believe that these points are only evidences of a general hyperæsthetic or neuralgic tendency.

4. Cracks and fissures of the vulva must never be lost sight of in searching for the causes of dyspareunia, especially when it does not exist from the first, but comes on after a time, or even after pregnancy and delivery. In the latter case they may be traumatic results of the process of labour, or, in any case, they may follow in the wake of a little eczema which has otherwise passed away. Their treatment is by free incision, as in anal fissures. It must be remembered, also, that a fissure of the anus, or even of the urethral orifice, may produce results which the patient herself cannot differentiate from those of fissure of the vulva.

5. Vascular caruncle of the urethra (p. 53) is, of course, an effectual barrier to connection. I never, however, met with such a growth existing at the time of marriage, and its existence, either previously or subsequently, is pretty certain to be diagnosed and appropriately treated, apart from dyspareunia. I have also described above (*loc. cit.*) those painful caruncles which may remain as vestiges of the ruptured hymen, or which occasionally appear independently on the vulva. The only remedy is thorough ablation. The non-protuberant vasculo-nervous degenerations of the vulva, spoken of along with the vascular caruncles, are most common in the aged and unmarried, as are also the intractable ulcerative degenerations described by Matthews Duncan.

6. Coccygodynia may be productive, among its other painful effects, of dyspareunia. I have said sufficient above (p. 59) of the varying causes and treatment of this affection, or rather group of affections.

7. Vulvitis and vaginitis, when at all acute, or even sub-acute, and whether specific or not, are a source of great pain during, or even completely preventive of, intercourse. Their general and local treatment are elsewhere fully discussed. They may, as we have seen, be an effect of futile attempts at coitus, rather than the primary cause of the dyspareunia or vaginismus, and the cases are too common where they are the result of contagion from an uncured gleet in the husband. These cases are specially intractable, and have sometimes disastrous results, from extension upwards to the uterus, Fallopian tubes, ovary, or peritoneum. Every observant family practitioner could narrate some such case, terminating the short-lived happiness of a young bride in life-long misery or untimely death. Barnes and Marion Sims strongly recommend the use of the vaginal dilator (figs. 36, 37) in most cases of vaginitis, to keep the inflamed surfaces apart, but I have more than once found the remedy worse than the disease. It is worthy of trial, however, and is invaluable after all operations on the vulva or vagina where recontraction is to be feared. In connection with vulvitis, the possibility of abscess in the glands of Bartholinus or elsewhere must not be lost sight of, and, indeed, we might add to our list of possible causes of dyspareunia nearly all those local affections of the vulva which are mentioned in Chapter II.

8. Complete atresia, or considerable stenosis of the vagina, whether congenital or acquired, may for the first time be brought to light by ineffectual attempts at intercourse, and will lead to treatment as described in Chapters V. and VI. But mere shortness of the vagina, not uncommon in girls married very young, or even at any age, and shrinking and rigidity of its tissues in women who marry late, will, if brought under our notice, call for a little judicious advice to the husband.

9. Chronic enlargements of the uterus, always apt to be accompanied by displacement downwards, backwards, or forwards, may cause dyspareunia at any period of married life, and this they may do, either from their abnormal position leading to undue pressure upon them during intercourse, or by their tendency to induce a generally congested and tender condition of the whole pelvis. Elongation of the cervix, in particular, has this result, whether it be the congenitally long conical cervix, or the enlarged cervix of chronic metritis, with or without laceration. I cannot here recapitulate the treatment either of these affections of the cervix, or of the inflammatory states, sub-involution, fibroid tumours, or cancer of the uterus, which have been elsewhere detailed.

10. Pelvic congestion is also, as a rule, merely a result of some of the above conditions, but becomes in itself a source of pain and discomfort on connection; and I have known its treatment by hot-water injections, glycerine plugs, or otherwise, speedily remove this complication, although

it is doubtful whether this is in all cases a gain, abstention being a part of the curative programme.

11. Pelvic exudations and contractions from effused lymph or blood have been considered in the last chapter. Every degree of impediment may be thus induced, and if it were not so, it may safely be said that all attempts at connection should be forbidden, long after the exudations or effusions have ceased to be recent.

12. Ovarian tenderness, from chronic inflammation, congestion, or cystic degeneration, or possibly from neuralgia, may give rise to dyspareunia, not only by its own tenderness on pressure, but also by the sympathetic neuroses which it may set up. The primary cause of pain itself, it may speedily cause spasm and pain on the slightest touch of the external parts, so as to lead to the belief that the whole mischief lies there. The same thing may be said of prolapsed ovary, and mistakes in these cases will only be avoided by making a complete examination of the parts, with the aid of anæsthetics if necessary.

13. Mere emotional causes may cause such resistance to connection as to lead ere long to the development of the vaginismus state, and in certain cases, and these very intractable ones, nothing abnormal can be discovered except the one feature of pain on sexual approach.

Vaginismus.

In such cases as the one last mentioned, and in others, where the symptoms of vaginismus may probably have been secondary to some now removed local obstacle, we are obliged to treat the affection as if it constituted a disease in itself. The first step, after seeing that there is complete marital separation for a time, is to soothe any existing spasm or sub-acute vaginitis or vulvitis by warm opiate fomentations, by injections if they can be borne, and by pessaries or suppositories of belladonna (ext. gr. iii.), atropia (gr. $\frac{1}{8}$ to $\frac{1}{2}$), or morphia (gr. $\frac{1}{2}$), and by the other means recommended above for the soothing treatment of vulvitis or vaginitis. In slight cases these means may suffice alone. At any rate, we are more free now to search for local painful causes, and to remove them. No investigation for this purpose is complete without anæsthesia, under the influence of which spasm relaxes, and a totally different examination of the vaginal canal is obtained. When no removable external obstacle can be noted, or when such obstacle has been removed, and if we are clear that there is no pelvic cellulitis or other uterine or pelvic disease, one of Sims's or Barnes's dilators may be easily introduced now, and left until the patient has recovered some time from the anæsthesia. It will not generally be difficult, after this, to introduce it

again without anaesthesia, and the wearing of this, or of one of increased size, daily for an hour or two, may suffice to bring about a cure. Where the pressure of the dilator cannot be borne, it may be necessary to divide the sphincter as a preliminary, and this is most safely done by tearing it with the two forefingers or thumbs. Simpson, following Burns of Glasgow, recommended division of the pudic nerve, as at any rate the best palliative treatment, in vaginismus, and he performed this subcutaneously by the tenotomy knife. This procedure has, however, been generally abandoned, and not improperly, seeing that it is almost impossible to reach the nerve with safety owing to its proximity to the internal pudic artery.

The catalogue of affections which may, in rare instances, produce dyspareunia, is not exhausted above, but sufficient has been said to put the practitioner on the look-out for a considerable variety of causes, very often not situated externally, although leading to symptoms of vulvar irritation and spasm. There are very few cases where the general health is not, primarily or secondarily, affected, and if local treatment can be combined with temporary separation, change of air, bathing, and general tonic regimen and medication, it is much more likely to be successful and permanent. Referring once more to a remark at the commencement of this chapter, there can be no doubt that vaginismus, as far as its emotional, hysterical, or neuralgic elements are concerned, is to a large extent a product of modern civilisation, due to errors in the physical or intellectual education of the sex, and in certain classes to the high pressure of the everyday life.

Sterility.

This subject may be treated with brevity almost equal to that bestowed on dyspareunia, and for the same reason. What we have chiefly to do is to enumerate the various causes, especially those which are amenable to treatment, which may lead to barrenness or to the arrest of fertility. Their treatment, where treatment is possible, will have been given in the preceding pages, and will require only a few remarks, here and there, as regards its bearing on sterility.

Sterility or barrenness, in any individual woman, may be congenital or acquired, *i.e.*, it may depend on her original organisation or on subsequent disease. It may also be permanent or temporary, and remediable by the *vis medicatrix naturæ* or by art; and it may be absolute or relative, *i.e.*, it may depend on some condition in herself, which, until it is cured by nature or art, will render her sterile under any circumstances, or she may only be barren in relation to her present husband and not to a former

or subsequent one. Several cases are on record where sterility has been the result of the connection of one husband and wife, while, after a divorce, both parties had issue by another mate. I know of no such case, however, where the absence of temporary disease in the female during her first marriage has been thoroughly proved by physicians endowed with the modern knowledge of uterine diseases and having facilities for investigation. Thus a woman with chronic endo-metritis may be apparently sterile, but let her be divorced and live for a time *absque marito*, her endo-metritis may disappear, and the husband and wife who were together infecund may, when married again to another mate, appear to have each acquired new powers. The fact of relative infertility of this kind, in the absence of disease, cannot, however, be denied, but, on the contrary, is rendered probable by the fact that it has been demonstrated in the case of some of the domesticated animals.

One of the most philosophical essays on this subject to which I can refer the practitioner is that of Matthews Duncan, the Gulstonian lectures for 1883, which are published in the first volumes of the *Lancet* and *Brit. Med. Journal* of that year, and since then in separate form. They deal with the matter from the point of view of comparative animal and vegetable physiology, and collate also many most interesting and laboriously gathered statistics on the relation of age and other non-morbid conditions to sterility or fruitfulness. I shall endeavour to epitomise a few of these observations, but the whole essay is in itself almost an epitome of facts, derived from or corroborated by statistical tables. For many most suggestive remarks on the causes of sterility in vegetables, or in the lower animals, the student must consult the paper itself; but the following conclusions of the author are of value, not only as mere scientific facts, but as bearing somewhat on the prognosis in any individual case of sterility.

He estimates the number of unfruitful marriages at about one in every ten. He considers that the average time after marriage for the birth of a first child is about one year; but he also adduces such strong evidence that three years very frequently elapse before this event, that there is no good presumption of permanent sterility until after this term. This is of considerable value, as diminishing the evidence in favour of many so-called cures of sterility at this early date in wedlock.

In relation to the amount of normal fecundity in the human female, he places the average interval between the birth of successive children at from eighteen to twenty months, and he gives the average normal physiological number of children as closely approaching to ten for each fertile woman. It is perfectly evident, however, that these averages are liable to so many disturbances, from an infinity of social causes, that they can only be used with great caution by the practical physician.

Too early marriage—that is, marriage under twenty years of age or thereabouts—is favourable to sterility, and still more to partial unfruitfulness, although every practical observer must know of many instances which seem to tell a different tale. The average ages of commencing fertility and of its cessation do not correspond with those of commencing and terminating menstruation. As to the difference between the average dates of the commencement of the two functions,—menstruation and child-bearing,—the statistics of civilised countries afford no reliable data; but in spite of instances familiar to all, the cessation of child-bearing would appear to arrive, in the average woman, at about thirty-eight years of age—i.e., seven or eight years in advance of the cessation of menstruation. This point has already been referred to when treating of the latter function. Some curious details are given as to the relation of sexual desire or pleasure on the part of the woman to fertility. The absence of either would appear to have some effect in diminishing fruitfulness, but how far this is due to alteration in the sexual relations, or to disability for conception inherent in the woman, does not appear. I know, however, of more than one tolerably large family where congress has been totally devoid of sexual desire or pleasure, and even of any strong desire for offspring, on the part of the wife.

But turning from Matthews Duncan I may again refer the student to a very different work,—to Marion Sims's *Uterine Surgery*, which, under this title, treats of the mechanical obstacles to impregnation. Gynecology owes much to this work, which was, the author has told me, to have been the forerunner of a complete treatise on the diseases of women, the crowning task of his life. In it there are certain details as to artificial impregnation which shocked the propriety of English physicians, and which, personally esteeming the man as I did, I should wish had never been written. But from Spallanzani downwards, many experiments of the kind have been tried, chiefly by continental practitioners, and the best corrective I can find is the statement of Paul Mundé, that "Sims himself has given up the practice altogether and does not expect to return to it again." One can easily enough imagine means of injecting small quantities of fresh semen into the uterus, without going into details. I trust the reader will never meet with a case where such proceedings seem to be honourably within his rôle. After all, Sims only once apparently succeeded, after fifty-five injections, in thus inducing conception, and this patient miscarried at the fourth month.

The subject of sterility, as it will be brought under the cognisance of the practitioner, will always resolve itself, with more or less circumlocution, into a triple inquiry:—(1) Which of the parties, husband or wife, is the causative agent in the childlessness, or of infecundity after one or more pregnancies? (2) If it be the male, what can be done to remedy

the defect? (3) If it be the female, as is certainly most commonly the case, what can be done of a remedial nature?

I may add a fourth question, a very pertinent one, one which a sensible husband will always put—Would it not be better to leave well alone, and accept a condition of affairs which has its social compensations? This is a very different question from that of—How is pregnancy, or too frequent pregnancy, to be prevented? a question which I shall leave untouched except by a few words subsequently. It is only the third and fourth of these questions with which we have here to deal. It is only fair, however, before subjecting a woman to painful or disagreeable examinations, to ascertain from her husband that there is no deformity in himself, and that he possesses the power of erection and emission; other points, such as the perfection of these functions, and the character of the semen emitted, I gladly leave to the surgeon or medical jurist.

We may at once say that dyspareunia, arising from any of the numerous causes mentioned above, is a very probable cause of sterility. But it will not do to insist too much upon this. Intromission, although it is in some countries necessary to constitute a legal rape, is certainly not necessary for impregnation. A single drop of semen once introduced into the vagina may, in an otherwise fertile woman, find its way to the ovum, and involve pregnancy. With the most intense vaginismus a woman may be potentially fertile, and accidental entrance of semen may convert this potentiality into actuality, while the occurrence of debauch may cure the vaginismus. Some of the causes of dyspareunia are ever, necessarily productive of sterility also; even although intromission and emission of semen are occasionally perfected.

In the first place, on the part of the female, we may have any dyspareunia, certain conditions which destroy the vitality of the semen and render it inert. We do not know all about this, but no more than we know why, in certain cases, the apparently healthy woman is productive of tolerably fertile issue. But we do know from experience that acid solutions tend rapidly to destroy the vitality of the semen, moderately alkaline solutions tend rather to preserve it, and vaginal secretion tends therefore to infecundity. Frequent and antiseptic injections or otherwise, or its use, will often lead to impregnation with the semen.

Secondly, we may have some mechanical obstruction to the semen passing into the body of the uterus. Some gynaecologists still deem necessary for normal pregnancy the removal of the tubes. I do not think this is necessary, although the factors

striking cures are occasionally produced by their removal. An absolute barrier is of course produced in this way by complete atresia of the vulva, hymen, vagina, cervix, or Fallopian tubes, the diagnosis and treatment of which have been fully discussed above. A less complete, although often an effective obstacle, may depend on vaginismus as above described; on narrowing of the cervix uteri, of congenital or acquired nature; on the ordinary type of infantile uterus; on elongation of the cervix, either in the form of long conical cervix, or of hypertrophied cervix from inflammation or sub-involution; on tumours of the vagina, especially cancer; on uterine tumours—polypi, fibroids, or cancer;—on endo-metritis or torn cervix; on uterine versions which throw the os and cervix uteri out of line; on uterine flexions which bend and thereby narrow the uterine canal; on the abnormal excretion of a complete uterine cast during menstruation (membranous dysmenorrhœa); or on metrorrhagia in any form, which tends to wash back the advancing spermatozoa.

Here is certainly a large number of possible causes, with all of which, however, we are now, I trust, somewhat familiar. Vaginismus has been quite recently described. Cervical stenosis (p. 197) will nearly always occasion dysmenorrhœa when it is a cause of sterility, and this symptom will be the most probable cause of our assistance being sought. In such cases, as in the case of infantile uterus (p. 194), if marriage does not lead to aggravation of the dysmenorrhœa, by causing uterine and ovarian hyperœmia, it may chance that impregnation may occur and lead to the cure of the affection. The elongated conical cervix (p. 198) presents an obstacle to impregnation, not only on account of the narrowing of its canal, but also because the semen is deposited in the deep *cul-de-sac* which it affords at the top of the vagina; and the same may be said, although less certainly, of the cervix which is much enlarged by chronic inflammation or hyperplasia. Tumours of the vagina act simply in virtue of their size, or, perhaps, also by leading to abundant acid vaginal secretion. It is not safe to assume, however, that impregnation is impossible, even with an excessive amount of sprouting malignant tissue in the vagina. The action of uterine tumours is also mechanical, but is no doubt aggravated by the menorrhagia and free discharge of other kinds which so constantly accompany them. Many a woman is sterile for many years after one or more pregnancies, owing to the unhealthy state of the endo-metrium, of the cervix alone, or of the body also. The action here is not single, for many women with endo-metritis or torn cervix conceive readily enough. The nature of the discharge must have much to do with it, for, setting aside any chemical action it may have on the spermatozoa, it is difficult to see how they can easily force their way through the tough and glutinous material in the cervix,

which is often proof against our efforts to remove it. But the unhealthy endometrium of the body must also oppose itself to the normal implantation of the ovum, even when fertilised, or may lead to very early and scarcely recognisable abortions. Torn cervix undoubtedly often acts also by leading to early abortion. The remedy of torn cervix by operative means has often been followed by pregnancy and delivery after years of barrenness, although the mere condition of ectropion of the cervix could hardly have been a mechanical obstacle. The relation of acute flexions of the uterus to sterility has already been sufficiently discussed. The subjects of membranous dysmenorrhoea are, I believe, invariably sterile, and the physiological as well as the mechanical reason is easily to be seen. Metrothruha or profuse uterine discharge of any kind is preventive of impregnation; but if there is no other obstacle, a very short intermission may suffice to permit of its occurrence, and it may then go on continuously. It will be seen that the condition of infantile uterus generally combines several of the factors which lead to sterility,—small impermeable cervix, flexed cervical canal, and accompanying retarded development or malformation of the ovaries or Fallopian tubes.

A third variety of causes of sterility acts also mechanically, by preventing the descent of the ovum into the uterine cavity. These chiefly affect the Fallopian tubes, and may be due either to faulty development or to acquired disease of those organs. Thus, in some rare cases their growth is entirely arrested, in others they are displaced congenitally, or as the effect of inflammation, so that they cannot adapt themselves to the ovary and receive its discharged ova. Not infrequently they are occluded at one or both extremities; and even when they are patent, their lining membrane may be so altered by inflammation that its cilia are destroyed, or the catarrhal state of the tubes may oppose viscid secretions to the progress of ovum or spermatozoa alike. The ovary as well as the Fallopian tube may contribute mechanically to the causation of sterility. If it is prolapsed or hernial, or if it is dragged out of position by displacements of the uterus, the result will be the same as if the Fallopian tube was displaced; the gland and its duct being divided, the product of the gland must find an abnormal site, and there is probably a good deal of truth in the statement of Lawson Tait—"I believe that the ovum falls into and perishes in the peritoneal cavity in by far the greater number of cases, and that the passage of it into the uterus occurs only in a small minority of the ova produced." Unless this is a gross exaggeration, there must be many women in whose case "always" may be substituted for "by far the greater number." The "disappointed ovulation" of Farre, where an ovum is formed but cannot be discharged owing to the toughness of the ovarian wall, is another in-

stance of mechanical obstruction to descent of the ovum ; and we need only add the many possible, and easily imaginable, but rarely diagnosable disturbances of parts which may result from inflammations of the pelvic, peritoneal, or cellular tissues. For the most part the causes of sterility included under this heading are quite incurable : or, if they, the causes, are curable, and are for other reasons cured surgically, it is by operations which only render the sterility more certain.

A fourth cause of sterility lies in the production either of no ovum, or of those only which are physiologically unfitted for continued growth and separate life. Here we come upon ground which is to a large extent covered by the work of Matthews Duncan. There are certain conditions of heredity, age, and climatic and other surroundings, which render a woman, as they do a plant, more or less sterile. They are a most interesting physiological study, and may come to have some real prognostic value when Captain Galton's life albums have become general ; and when people have learned the necessity of filling them up honestly, *i.e.*, I fear, somewhere about the Greek calends. No one can estimate more highly than I do the value of such scientific inquiries, but it would be a mistake to suppose that in those statistical averages we have as yet got a rational answer to the question—"Why is my wife unfruitful?" All that we can say under this fourth heading is that if we can detect serious abnormality of development in any part of the genital system, this alone may suffice to account for sterility, because it is very likely to be accompanied by congenital defects in the chain necessary for ovulation, impregnation, and fully accomplished pregnancy. If we have reason to believe, either from the history, or from examination, that ovaritis or peri-ovaris, in its widest sense, has occurred, or if we can detect cystic degeneration, or any form of tumour of the ovary, we have a strong probability of sterility, but to make this a certainty, we must be assured that both sides are affected. The occurrence of early atrophy, or of loss of function in the ovary, following on zymotic disease, or as a super-involution subsequent to pregnancy, must always be borne in mind, although it can rarely, if ever, be diagnosed with certainty. The bearing of syphilis, maternal or paternal, upon sterility is not fully worked out ; its tendency to produce early abortion is known to every obstetrician.

The discussion of the subject of sterility would be entirely incomplete unless it included an answer to the fourth question originally proposed—"Is it advisable to leave well alone, as far as any active treatment is concerned?" I have seldom answered this question in the affirmative to the immediate satisfaction of my patients, but, so far as I am aware, I have never done so without ultimately earning their gratitude and respect.

In the first place, I would strongly advise the practitioner not to lay too much stress upon the special importance of an heir in the particular case in which he is consulted. There is no necessity for informing the patient that you do not see the extreme necessity in the same light that she and her husband do. But operations of complaisance are always to be deprecated, and I would counsel that no risk should ever be incurred in such cases, beyond what would be considered advisable in the case of husband and wife, who were simply desirous of the increased happiness of offspring, but who were sensible enough to deprecate any proceedings fraught with danger to life or permanent health.

Secondly, the coexistence or non-coexistence of dyspareunia must be taken into account, and the practitioner may fairly use any operative means which are justifiable for the removal of this, in the hope that fertility will also ensue.

Thirdly, the coexistence of serious dysmenorrhœa is still more a reason for performing or even urging the performance of, operations, attended with some risk, but which would hardly be justifiable if we considered only their problematical effect in curing sterility.

Fourthly, if dyspareunia or dysmenorrhœa are not factors in the case, the practitioner is not justified in recommending any operation which may be followed by serious results. He should weigh well the question which every physician should put to himself before using a dangerous drug—"What harm may I do in proceeding thus, and how far am I certain that the risk of harm thus involved is counterbalanced by anything like a certainty that I shall effect good?"

As a result of these considerations, I would urge that sterility, which cannot be distinctly traced to local causes, and which is, therefore, presumably due to some kind of general law of heredity, or age, or surrounding circumstances, should never be treated otherwise than by hygienic means, and that no experimental surgical proceedings are permissible. If, on the other hand, there are local deformities, or arrests, or redundancies of growth and development, treat them or leave them untreated, as you would if the question of sterility was not before you.

In all cases of chronic inflammatory character act in the same manner.

In fine, however you may put the matter to the patient, you should put it to yourself in this way. I will cure dysmenorrhœa or dyspareunia in any legitimate manner that I can, and I may thereby not infrequently cure sterility; but I will perform no operation of any serious character for the last purpose alone, the risks being certain, and the probabilities of success being always highly problematical.

Prevention of Pregnancy.

I have intimated above my intention of saying a very few words upon this subject. I would rather have avoided it altogether, and I will fulfil the task only by a quotation. Dr Goodell (*op. cit.*) says:— "In a late discussion before the British Medical Association, in which some of the foremost men of England took part, it was the unanimous verdict that over-breeding does not produce ill-health, so much as efforts to prevent conception. There are, in fact, no harmless or available means for thwarting nature's plain intention, for if they should not injure the body they assuredly will the mind. I dare any political economist to show me one innocuous expedient whereby conception can be avoided. I challenge him to name a single preventive plan which will not do damage either to good health or to good morals. Depend upon it, gentlemen, there are no thornless hy-paths by which man can skulk from his moral and physical obligations; no safe stratagems by which he can baulk God's first blessing and first command. Therefore, as hygienists, if not as moralists; as physicians, if not as patriots; as guardians of the public health, if not as philanthropists; I charge you to frown on such practices and take a bold stand against them." Subjects like these are hardly fit to be discussed in the class-room, yet the young practitioner cannot be long in practice without meeting with a case in which he would desire the counsel of his elders. I can with confidence refer him to the last chapter of Goodell's *Lessons on Gynecology*, as treating of such matters without pruriency, yet with the utmost plainness, and in the highest moral tone.

CHAPTER XXI.

SOME AFFECTIONS OF THE FEMALE URETHRA, URETERS, BLADDER,
AND RECTUM.

IN the foregoing chapters we have discussed the affections of the female sexual organs, and our task might here cease. But the urethra, ureters, bladder, and rectum, although common to both sexes, are so intimately associated with the sexual organs anatomically, and have such numerous inter-relations, that we have been obliged continually to refer to them, and it seems desirable to add a few brief observations on some of their own more common affections. Those of the bladder and urethra at any rate, and in a less degree, those of the rectum, continually come under the care of the gynecologist, and the symptoms of disease in all these organs are so intermixed that it is difficult or impossible, in many instances, to diagnose or treat the diseases of one without a knowledge of those of the others. For a full description of the diseases of the female bladder and urethra, the best work to which I can refer the English student is that of Skene (*Diseases of the Bladder and Urethra in Women*, W. Wood & Co., New York, 1878).

The Female Urethra.

The female urethra differs *in toto* from that of the male.

The whole canal is about $1\frac{1}{2}$ inch in length, but wider than that of the male. Its external orifice (fig. 32) lies at the back of the vestibule, and is puckered and more or less prominent, so that it is easily discovered by the *tactus eruditus*. The direction of the canal is upwards and backwards from without, and corresponds with the axis of the pelvic outlet. It is, however, liable to distortion by many gynecological affections. It is furnished with both striped and unstriped muscular fibres, longitudinal and circular. It presents numerous small villi and glandular elements, and near the entrance are two small tubules (fig. 203) running backwards in a parallel direction, and which may participate in and prolong the duration of catarrhal or gonorrhoeal inflammation. Its epithelium is for the most part squamous, the cells being smaller

than those of the vagina, but towards the inner end they become columnar.

MEANS OF EXAMINATION AND DIAGNOSIS.

For the diagnosis of urethral affections we make use of *Inspection*, conducted in the same manner as that of the external genital organs. This shows us the existence of any eversion of the urethral wall, of the great majority of vascular caruncles, of catarrhal or purulent discharges, or of dilatation of the canal. By *touch* we ascertain the existence of pain at any portion of the canal, we may extrude from the meatus caruncles, not apparent without this means, and we may also, by drawing the finger from behind forwards along the anterior vaginal wall, ascertain the existence of urethral suppuration. By the *sound* we ascertain the patency and direction of the canal, the state of its mucous membrane, and the presence of foreign bodies. It is useful also to detect the precise seat of pain or stricture. For more minute or careful investigation *dilatation by the finger* is required. If the patient be anaesthetised the little finger can, after some resistance about the meatus, be inserted through the adult canal, and this can be followed up by the index, if of average size. The assistance of a finger or fingers of the other hand in the vagina will render the information obtained more certain, and, for the exploration of the bladder in this way, one hand may be applied to the abdomen, as in the ordinary bi-manual vaginal examination. The indications for digital dilatation of



FIG. 203.—Urethral Tubules (Skene). The Urethra is laid open, and Probes are introduced into the two Tubules.



FIG. 204.—Skene's Urethral Endoscope.

the urethra, apart from the examination of the urethra itself, will be given below, as will also the description of instrumental means for the same purpose. The index finger may be considered as the full limit of safety to dilatation in adult females, all further stretching

being liable, although not necessarily so, to produce rupture or permanent incontinence. For the purpose of examining the interior of the urethra by sight some form of *speculum* or *endoscope* is required. Matthews Duncan uses an exceedingly small Fergusson's speculum, and this answers the purpose fairly well if the canal be first dilated by the finger. Skene has introduced a more perfect but more complicated instrument (fig. 204) consisting of a fenestrated vulcanite outer part, shaped like a test-tube, of a glass tube which fits loosely within it, and of a mirror which acts somewhat as that of the laryngoscope. It shows well, with proper lamp accompaniment, the palish lining membrane of the canal, and any variations from the normal aspect.

MALFORMATIONS OF THE URETHRA.

Malformations of this organ are so intimately associated, as a rule, with those of the genital tract, that the reader may be referred to the same authorities for a complete account of them. But the urethra has been found entirely absent when the other organs were perfect, and the lower portion alone is sometimes found deficient (hypospadias), as is more rarely the upper. Complete atresia is more common. The result of these malformations will be either incontinence or retention of urine. Skene observed a case where, from congenital atresia, the bladder was so distended at birth as to render delivery very difficult. For the surgical relief of such abnormalities, special surgical works must be consulted. A very rough remedy, although it may be the only available one, in case of complete atresia at birth, consists in introducing a trocar as nearly as possible in the direction of the normal canal. Double urethra is a very much more rare anomaly than double vagina, and may be dismissed here as a pathological curiosity.

FUNCTIONAL DISORDERS OF THE URETHRA.

These, as far as they exist, are more usefully merged in the account of functional disorders of the bladder and urination. In neurotic subjects, however, neuralgic pain is occasionally felt in the direction of the urethra only. I have met with one or two such cases where I could find no evidence of organic disease of any kind, and I have obtained relief by the passage of a sound dipped in carbolic glycerine (1 in 5). There was smarting at first, but speedy relief soon afterwards, the neurotic or neuralgic state of system not being neglected. Skene recommends the local application of bismuth, and afterwards of aconite and opium, in such cases.

PRESSURE ON AND DISPLACEMENT OF THE URETHRA.

Quite independently of displacements of the bladder, the urethra may be compressed or distorted. Fibroid and other tumours of the pelvic

organs may cause displacement upwards, downwards, or laterally, occasionally producing retention of urine. This requires to be kept in view in using the catheter, and permanent relief may be impossible in this way unless the mass is free and can be pushed above the pelvic brim. Prolapse of the anterior wall of the vagina may affect the urethra, either bending its upper part downwards, or protruding the whole, and even giving it a direction downwards and forwards, instead of upwards and backwards. Care should be taken to remedy this state of matters after hard labours, by the use of astringent pessaries, and by attention to the torn perineum at the time of rupture. Loss of control is more apt to follow partial downward displacement, and difficult urination complete protrusion of the urethra.

STRICTURE OF THE URETHRA.

Strictures, and even complete atresia, of the urethra are occasionally the result of disuse of the canal, in vesico-vaginal fistula, but, when complete, some inflammatory condition of the wall, such as is met with in the male, is probably superadded. Occasionally, although less frequently than in the male, contraction occurs from gonorrhoeal inflammation, or from traumatic causes, caustics, &c. In many instances the contraction is fortunately almost confined to the meatus. The careful use of the sound, whenever micturition is difficult, an elastic one being preferable, is the sole means of accurate diagnosis, remembering always the possibility of distortion of the canal without stricture. Slow and careful dilatation seems to be safer than, and preferable to, rapid dilatation or incision, although these plans are called for in a few cases. Skene also points out that a slight stricture at the internal orifice, by interfering with the functions of the bladder, may give rise to retention of urine or irritable bladder in a more considerable degree than narrower strictures elsewhere. The diagnosis of this trouble is arrived at mainly by exclusion of other causes—of external pressure, prolapse, or paralysis of the bladder—and by discovering at the inner extremity of the canal moderate resistance to a full-sized sound.

DILATATION OF THE URETHRA.

The urethra is capable of great dilatation, independently of that which is intentionally produced. I have met with a case of atresia vaginæ where injections had been administered *per urethram* into the bladder, under the supposition that they were vaginal, and for the cure of amenorrhœa. The meatus may, even under these circumstances, retain much of its contractility. The centre of the canal not infrequently becomes much dilated in cases of vaginal prolapse, also from the occurrence of

growths within it, from chronic inflammatory thickening of its mucous lining, from the passage of calculi, or from obstruction by small growths or stricture at the meatus.

The *symptoms* point to some difficulty in urination, with or without incontinence or partial retention. But the sound can alone clear up the diagnosis, combined with digital manipulation through the vagina: it detects either a compressible swelling in the site of the canal, or one rendered rigid by hypertrophic thickening. The free movement of the point of the sound within it can also be ascertained. Purulent or semi-purulent fluid often collects here, and is occasionally expelled in quantity. Peri-urethral abscesses opening into the canal will closely simulate this condition, and must be differentiated by the history of inflammation, by the scope of the movements of the sound, and by the surrounding infiltration which it causes.

Treatment.—In moderately severe cases of dilatation it is sufficient to treat the mucous membrane by astringents, as in chronic urethritis, and to support the prolapsed portion by a well-fitting pessary, as advised for prolapsus vaginæ and cystocele (p. 330). I have no experience of excision of a portion of the wall, or of contracting it by application of the actual cautery, or of temporarily opening the most dependent part, as advised by Bozemann, and, as we shall see, occasionally practised on the bladder in certain intractable affections of that organ.

LACERATION AND FISTULA OF THE URETHRA.

This may occur, either into the surrounding connective tissue, or into the vagina, constituting in the latter case urethro-vaginal fistula. Of fistulæ of the latter kind as much has been said as comports with the scope of this work. Lacerations or incomplete fistulæ may be the result of peri-urethral abscesses, or of artificial dilatation carried to too great a degree. In the former case Skene recommends, although he has not practised, the method of making the fistula complete by means of a vaginal incision. Judging from analogy elsewhere, this would be the quickest and most satisfactory plan. The fistula may heal of itself if a catheter be worn or very frequently used. Laceration by over-rapid dilatation is almost certain to end in permanent incontinence of urine. To be forewarned is to be forearmed.

Laceration or cracking, extending through the vesical orifice, is apt to result from ulceration, or to follow urethritis or puerperal pressure. It gives rise to severe continuous pain, much aggravated after micturition, and to spasmodic incontinence—in fact, to symptoms very similar to those of calculus, cystitis, or urethritis. The two latter may be eliminated by observation of the urine and of the expressed contents of the

urethra, the former by careful use of the vesical sound. Skene, who first described this condition, recommends the withdrawal of all ordinary treatment for urethritis, the application to the crack solely of a fine probe coated with nitrate of silver, as in the treatment of cracked nipples; more effective still, moderate dilatation of the urethra, or, in stubborn cases, free incision *per vaginam*. I succeeded in permanently curing one such case by the least heroic of these methods, but the fissure was easily seen and reached through Simon's dilator, which is not usually the case.

URETHRITIS.

Acute urethritis is in almost every case caused by gonorrhoeal infection, and its occurrence along with vulvitis or vaginitis may be regarded as almost diagnostic of the specific nature of the attack. It is well, therefore, in every case of inflammation of these organs, to press the urethra from behind forwards, and thus make sure whether pus exudes and urethritis coexists. The general treatment is that of gonorrhoea, and when a sub-acute stage is reached, iodoform, carbolic acid, nitrate of silver, or iodine in strong glycerine solution, may be usefully applied by means of the sound. Injections are dangerous owing to the contiguity of the bladder.

Chronic urethritis may be a sequel of the acute form, but will sometimes also be met with under other circumstances—for example, in urethral dilatation or prolapse, in cystitis, or from cold or prolonged exertion. The same treatment is available as in the secondary stage of the acute form, and may require considerable persistence.

FOREIGN BODIES IN THE URETHRA.

Calculi may lodge here on their passage from the bladder, leading to retention, and may be easily discovered by the cautious use of the metallic sound. The canal is so distensible that with anaesthesia these may easily be extracted by a small curette, such as that used by aurists (fig. 38), if steadied by a finger in the vagina, and recourse will seldom be required to urethrotomy. Pins, beads, or other substances introduced from without, or irregular shaped bodies which may have entered the bladder first, such as fecal bones or fecal concretions, must be dealt with by dilatation and subsequent extraction, entire or in fragments.

ABNORMAL GROWTHS IN THE URETHRA.

These have been elaborately classified according to their pathological nature, but a brief notice of the more important must suffice here.

Urethral Caruncles, or Vascular Growths.—These growths have been sufficiently described and treated of above (p. 55). All that need here be said in addition is that, partly by obstructing the canal, partly by causing spasm, and partly by leading to voluntary over-retention, they may occasionally give rise to urethral dilatation, to chronic urethritis, or to cystitis. It is surprising, however, how seldom these results are observed. Occasionally, in connection with urethral dilatation, or more rarely without it, the lining membrane of the urethra becomes inverted and bulges through the meatus, and, becoming in time red and swollen, it may very closely resemble a urethral caruncle. Care must therefore be taken to ascertain the existence or non-existence of a pedicle, and the relation of the urethra to the mass. In caruncle it surrounds the growth; in inversion the swelling wholly or partially surrounds the urethra. The symptoms are very similar.

Polypi of various kinds sometimes occur in the urethra. First, and most rarely, as occluded glandules; secondly, and also rarely, as small pedunculated fibromata; and thirdly, as vascular growths—the above-mentioned urethral caruncles.

Varix of the urethral and surrounding veins may cause some distention of the passage, or may give rise to hæmorrhage, or to thrombus in its neighbourhood. The blue discoloration of the parts, and the immediate, although temporary, reducibility of the swelling on pressure will point to the nature of the affection.

Cysts, of glandular character, are occasionally found plugging the meatus, or protruding as polypi.

Treatment.—The various polypoid growths, when near the orifice, are treated as has been recommended with regard to vascular caruncles. Various snares, ligatures, and forceps, similar to those used by aurists, have been devised for the purpose of reaching and removing those lying further within. I must refer the reader to special works for a knowledge and comparative estimate of these.

Cancer rarely attacks the urethra in a primary form, and even extension is uncommon in this direction. It is chiefly met with, when it does occur, as small nodules, which in time break down either into the canal or into the vestibule. Diagnosis should not be difficult.

THE USE OF THE CATHETER.

It may not be out of place here if we say one word as to the common operation of passing the catheter, and it will apply also, for the most part, to the passage of the vesical sound. In ordinary retention, and especially if there is any probability of alteration in the direction of the canal, the gum-elastic male instrument, about No. 8, is preferable to the

metal one. The student should learn to use it with equal facility whether the patient is in the lateral or dorsal position. If on her side, the knees and thighs are well flexed, and the more the body is also flexed, with the head away from the operator, the better. The left forefinger, well-lubricated, is passed within the vagina, and its palm is turned towards the pubic arch. Just under the arch lies the urethra, which can almost always be felt as a rounded cord. The finger is now slowly withdrawn along this, and will encounter the orifice at the base of the vestibule (fig. 32). No description will, without practice, enable the operator without fail to detect the slightly elevated, soft, perforated point, but this is not difficult to those who possess accurate tactile powers. The orifice being thus found, the catheter, well oiled and carbolised, is held lightly in the right hand, and is guided into it by the left forefinger. It will slip along in the right direction, upwards and backwards, unless there is some obstacle, in which case the same tentative care is needed as in passing a bougie in the male. If the patient is upon her back, the knees are well flexed, the right forefinger, passed under the right thigh, is used as the guide, and the catheter, held by the left hand, is passed from above, between the thighs, and round the pubes. Although many prefer this latter plan, I have always considered the former as the easier, and the less^a irksome to the patient, when circumstances permit of a choice.

The Ureters.

These, the feeding canals of the bladder, should receive a passing notice, not so much on account of their own maladies as from their tendency to be implicated in various way by gynec affections. The pressure of ovarian, uterine, or other tumours, or of cancer, may lead to their closure, and so to the production of dilatation of themselves and the kidneys. The extension backwards of inflammation may lead to pyelonephritis and other fatal diseases of the kidney. They may be involved in adhesions with ovarian tumours, so that it may be impossible to avoid injuring them during operation. In three instances of ureteral fistula thus produced,—one in the practice of a friend, and two in my own,—one patient died from shock before there was time for mischief from this cause, the ureter being fixed to the external wall; in another, the fistula unexpectedly revealed itself after the separation of a clamp, which included a large irremovable portion of a thick-walled ovarian cyst. This patient perfectly recovered from the operation; after several weeks, the flow of limpid urine began gradually to cease, and finally ceased completely, without any sign of ureteral or renal dilatation. In the third

case, similarly complete spontaneous recovery also took place, by gradual arrest of the flow, and, it is believed, by atrophy of the corresponding kidney. The ureters also, although fortunately rarely, may be involved in fistulae due to labour, and it is most essential to bear in mind their position in relation to the bladder in all operations upon the back or lower surface of that organ. But the anatomists do not furnish us with information on the point, of such exactness as that of which they are apt to bewail the want in practical medicine. According to Garrigues, quoted by Hart and Barbour (*op. cit.*, p. 32), "the ureter does *not* lie in the broad ligaments, it does *not* keep the same direction on reaching the wall of the bladder, and it does *not* lie close up to the wall of the cervix uteri, all of which is taught by anatomical authorities." The most recent researches on the subject are by Holl of Junsbruck (*Wiener Med. Wochens.*, Nos. 45 and 46, 1882). They involve, however, such an amount of anatomical description that I shall best serve the purpose of my readers by inserting a brief description of the relations of the ureters, after they enter the true pelvis, from the pen of Mr J. Collier, recently demonstrator of anatomy at the Owens College. He has kindly verified this description by several special dissections, some of which were also inspected by my late lamented colleague, Professor Morrison Watson.

COURSE OF THE URETER IN THE FEMALE PELVIS.

"The ureter enters the pelvis by crossing the termination of the common iliac, or more frequently the commencement of the external iliac artery. It then passes downward and forward, crossing the inner side of the external iliac vein, and lying parallel to and just in front of the internal iliac artery. In this course it reaches to within about half an inch of the upper border of the great sciatic notch. After the splitting of the internal iliac artery into its anterior and posterior divisions, the ureter keeps a position in front of the former until that division splits into its branches. It then crosses on the inner side of the termination of the anterior division or the commencement of its terminal branches, and describes a curve with its convexity backwards. In the middle of the curve it is crossed, on its inner side, by the uterine artery, which is only separated from it by a few veins. The ureter then crosses forward, outside the cervix uteri, about half an inch from it, and at the level of the external os. It now runs along the lateral aspect of the upper part of the vagina, turns slightly inwards, so as to lie between the junction of the anterior and lateral aspect of the vagina posteriorly, and the posterior wall of the bladder anteriorly.

"In this part of its course the ureter reaches as low as the middle of

the anterior vaginal wall. When piercing the bladder wall the ureter runs downwards, inwards, and forwards.

"As regards its relation to the peritoneum, in the first part of the above course the ureter lies between the pelvic wall, and the peritoneum forming the lateral boundary of Douglas's pouch. It then comes forwards opposite the outer inferior angle of the broad ligament, and runs forward and inward in the areolar tissue lying between the peritoneum above and the visceral layer of pelvic fascia below."

With this description before me, it is a source of considerable wonder that the large exudations of lymph, so common in the peritoneal pouches and cellular interspaces of the pelvis, do not more often produce disastrous results by pressure on, and occlusion of, the ureters.

The Female Bladder.

The bladder has three openings—those from the ureters and that into the urethra. The entrances of the former lie about $1\frac{1}{2}$ inch from that of the latter, the intervening triangular portion (trigone) (fig. 206) being smooth, while the remainder of the internal surface of the bladder is wrinkled. The ureteral openings are oblique and very small, while the opening into the urethra is larger. The existence of a true sphincter is very problematical, and the action of one is said to be performed by the surrounding tissues—mucous and connective. The action of the bladder, however, is in the nature of a systole and diastole, dependent, like that of the heart, on alternate distention, reflex inhibition, contraction, and flaccidity (Hart and Barbour). The prevention of regurgitation into the ureters, during vesical contraction, is brought about, according to Skene, (1) by their oblique mode of entrance; (2) by two rudimentary muscular slips running from the mouth of the ureters to the point of exit of the urethra; and (3) by an elastic inter-ureteral ligament, which drags upon the openings when they are fully separated by the distention of the bladder. The female bladder is larger, or at any rate more capacious, than the male, flatter, and broader, and it lies lower in the pelvis. Its shape differs at various ages, and its position is liable to constant changes due to pregnancy or other conditions of the female organs. Halliday Croom has a most interesting monograph on these changes as affected by and affecting parturition (Edin., Douglas, 1844). The mucous membrane is wrinkled, owing to the laxity of the submucous tissue; its epithelium is in part squamous, in part columnar, with transitional forms, and it is very doubtful how far it possesses absorbent powers.

MEANS OF EXAMINATION AND DIAGNOSIS.

By *inspection* we learn but little of the condition or affections of the bladder. Great distention is evident to sight, but cannot thus be differentiated from other swellings of the abdomen, and prolapse of the anterior wall of the vagina, containing a portion of the bladder (cystocele) is also recognized by sight, aided by expulsive efforts on the part of the patient. By *vaginal touch* the condition of the bladder as to tenderness is made out, and, assisted by the bi-manual method, it is possible to form a tolerably clear idea of the size and general characters of calculi, foreign bodies, or neoplasms of the organ. For the purpose, however, of obtaining an accurate notion of some of these affections, it becomes necessary to make use of exploration of the interior of the bladder by the finger—*vesical touch*.

We have already spoken of the insertion of the finger into the urethra for the purpose of exploring that organ, but for vesical diagnosis the little finger will not suffice, and in order to introduce the forefinger, it is generally advisable to dilate the urethra by one of the mechanical contrivances about to be mentioned, following up the dilatation immediately by the finger. The finger may, however, with full anaesthesia suffice alone. When fully introduced, it is carefully rotated and opposed by the fingers of the other hand above the pubes, and through the vagina or rectum, in turn. The front of the uterus, the vesico-uterine interspace, the broad ligaments, and the Fallopian tubes, can be explored in this way, but sufficiently accurate diagnosis of the condition of these parts is nearly always obtainable without the aid of an operation which is never without some danger of producing permanent incontinence of urine, or rupture of the urethra. The dorsal position is always desirable. Neither the vesical touch nor the preliminary dilatation should ever be attempted when there are any traces of recent pelvic inflammation.

The *vesical sound* is familiar as a means of diagnosis to all surgeons, and it is self-evident that we can obtain much assistance by the simultaneous use of vaginal or rectal touch.

Dilatation of the urethra, for the purpose of vesical diagnosis, may, as we have seen, be accomplished by the finger alone, but both for this and for purposes of treatment, some instrument is commonly used. Simon's dilators or specula (fig. 205) consisting of a series of vulcanite tubes with removable rounded extremities, are the best known. They are introduced in successive sizes, slowly and cautiously, and Simon maintains that the safe limit in the adult is about $2\frac{1}{8}$ inches in circumference. In many cases there is danger considerably short of this limit, and the mentus should be particularly slowly dilated in all cases. Various

branched instruments, the branches separable by screw-action, have been invented for urethral dilatation, but, even when covered with india-rubber sheathing, they are harsh in action.

It may be as well to specify here the various indications that may occasionally be served by urethral dilatation. These are, the introduction of the finger for the diagnosis of stone, foreign bodies, fistulae, or other purposes; the passage of endoscopes, and the introduction of instruments, fluids, or caustics for treatment; the removal of calculi, foreign bodies, or morbid growths; the cure of fissure, and the relief of cystitis or irritable bladder. *Endoscopic examination* of the bladder is as yet in its infancy. The catheterisation



FIG. 205.—Simon's Urethral Dilators.

and examination of the ureteral openings by finger and sound (fig. 206) is one of those diagnostic curiosities of which I have little personal experience. I have once or twice attempted it, but lamentably failed. The diagram requires no explanation, and the process looks very simple; but Winkel, from whom it is taken, ad-

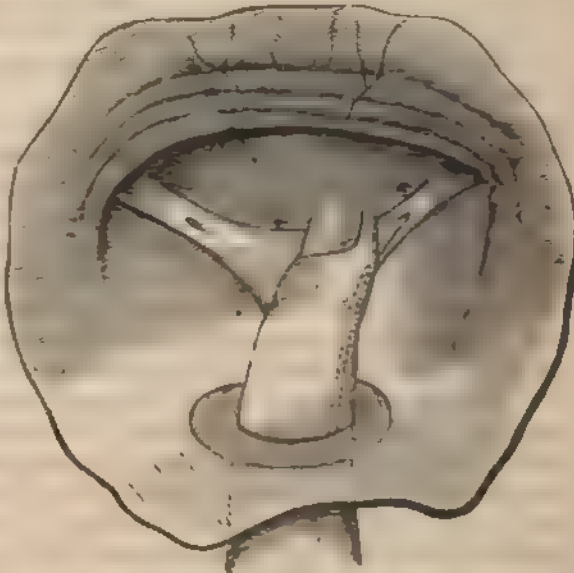


FIG. 206.—Catheterisation of the Ureter (after Winkel).

mits that after many persevering attempts he had never succeeded himself in finding the openings with the sound.

It is beyond my present limit to describe the various urinary conditions which may affect the bladder, or be caused by its maludies.

CONGENITAL MALFORMATIONS OF THE BLADDER.

I must again refer my readers for a description of these affections, to Skene, Kussmaul, Schröder, or other writers on the subject, merely stating that the most common forms are those of fissure or non-closure, with eversion of the walls, and, less frequently, of a duplex condition similar to, and accompanying that of, the vagina.

FUNCTIONAL HYPERÆSTHESIA (IRRITABILITY) OF THE BLADDER.

Hyperæsthesia or excessive irritability of the bladder may be, and very frequently is, encountered as a functional affection, independently of any other discoverable disease of the organ; and, on the other hand, it is often the foremost and only symptom of the most serious diseases in their earlier stages. Its diagnosis as a functional affection will therefore always require the probable, if possible the certain, exclusion of organic causes.

Symptoms.—These may be summed up as, frequent if not constant desire for micturition, with a certain amount of uneasiness, referred sometimes to the supra-pubic region, but more often to the neck of the bladder; these symptoms being sometimes accompanied by some tendency to either retention or incontinence.

Causes.—The functional affection has always more or less of a nervous causation—the hereditarily neurotic, the hyperæsthetic, and the hysterical are its chief victims. The condition of the urine may conduce to or even solely produce it. Acidity or alkalinity, the presence of oxalates, of albumen, or of sugar, or even the too limpid fluid of the nervous subject, may, each and all, but especially the first and the last, figure as causative agents. Reflex nerve irritation, from irritation of the genital system, including the ovaries, may prove an exciting cause, and most writers mention masturbation as an occasional factor of the kind. Lowering disease of any kind, cold, and pregnancy may be added to the etiological list, the last acting sometimes mechanically, sometimes by reflex irritation. Habitual constipation has seemed to me to be an occasional cause. Every uterine or pelvic disease,—displacement, congestion, &c.,—is occasionally accompanied by hyperæsthesia of the bladder, but these causes stand apart, and can hardly be considered as functional.

Diagnosis.—The symptoms being present, the diagnosis of functional hyperæsthesia can only be arrived at by the exclusion of organic disease. Cystitis will be differentiated by greater accompanying pain on pressure, and by careful examination of the urine, and only a thorough pelvic examination will make sure of the non-existence of

accompanying, and perhaps causative, disease of organs other than the bladder. The severity of the symptoms and their inamenable to treatment will lead to careful exploration of the bladder and urethra, in search of any of the local diseases about to be discussed. In young and neurotic women much may be taken for granted for a time, although not indefinitely, if the urine is carefully examined. In older or post-parous women a careful local examination should precede all treatment.

Treatment.—Organic disease being excluded, the treatment of the neurotic, hysterical, or otherwise lowered condition of the patient is of the first importance. I need not recapitulate what has already been said on this point. Strychnia is here one of our most valuable tonics, and in small doses exerts a favourable local influence on the vesical muscles. The bromides play also a useful part. The food must be bland, nutritious, and unstimulating. Fluids may be freely allowed if the urine is at all dense, and the following diluents are sometimes serviceable in such cases,—barley-water, almond emulsion, triticum repens, buchu, or marsh-mallow. When the irritation is great, chloral (gr. xix. *per rectum*) and tinct. of belladonna by the mouth, or morphia and belladonna in suppository, are the most useful calmatives. Ergot of rye in continued doses seems to exert a local tonic influence. The various conditions of urine mentioned above must be treated on general principles. In obstinate and distressing cases morphia may be injected into the bladder in rather full doses, the fear of absorption being slight. Carbolic acid gas has been directed into the bladder with good effect, but I have no experience of its use thus. Catheterisation seldom affords permanent relief, but in the most obstinate cases success may occasionally be obtained by the retention of a catheter, as after pelvic operations, or by dilatation of the urethra as above described. When failure is persistent, repeated examination may detect hitherto undiscovered organic causes.

INCONTINENCE OF URINE.

This troublesome affection is most common in young children and adolescents, or in the old and enfeebled, especially the multiparous. In the former it is almost always, like hyperæsthesia, a neurotic affection, although hyperæsthesia may or may not be present, and there is generally great laxity of those tissues which play the part of sphincter to the bladder. In the latter case, that of old or enfeebled subjects, the trouble is almost always associated with displacements of the uterus, vagina, bladder, or urethra, and in these it is also often accompanied by incomplete emptying, leading in some instances to chronic cystitis. The incontinence which is due to vesical or urethral fistula, stands, of course,

in quite a separate category. In middle life, while either the neurotic element or the occurrence of urethral displacement may be present, there is always a considerable probability that uterine flexions or pelvic tumours, or exudations, may, by their pressure, lead to the incontinence; and even when there is no evident history of these, they must be carefully sought for; urethral growths, vulvar caruncles, or other causes of vaginismus or dyspareunia not being forgotten in the search. The incontinence of cystitis, hypertrophy, calculus, or foreign bodies and neoplasms of the bladder, is simply due to exaggerated hyperæsthesia of organic origin.

Diagnosis.—The fact of incontinence is self diagnostic, the degree, the amount of constancy or intermission, the age of the patient, and the other accompanying details, pointing more or less to neurosis alone or to the existence of organic causes, which must be sought for and treated.

Treatment.—Setting aside all serious diseases of the pelvis, vulva, or bladder itself, and so far as the neurotic cases alone are concerned, there is almost nothing to be added to what has been already said as to the treatment of hyperæsthesia of the bladder and of general neurasthenia. Mild stimulation of the bladder tissues by strychnia or ergot is not incompatible with diminution of irritability, and belladonna or the bromides, while fulfilling the latter indication, are not incompatible with the former remedies. Cold bathing, in those who can stand it otherwise, is an effective remedy. The rectum must be freed from the irritating presence of ascarides, scybala, or hæmorrhoids. Quinine is probably a remedy of the same class as ergot and strychnia, as well as a tonic. Common sense, and observation of the urine, will dictate the amount of fluids to be allowed; the avoidance of these late in the day is desirable in the case of bed-wetting in young persons, and the early formation of good habits is of the same value as in constipation. The dribbling which may accompany spinal or brain affections is only an effect of paralysis.

RETENTION OF URINE.

Causation.—Retention in the female may be of nervous character, as is not infrequently the case in hysterical women, or it may be due to paralysis of the bladder, to obstruction within the urethra, or to tumours or exudations pressing upon the bladder or urethra.

Treatment.—Neurotic retention may occur in a healthy woman, as a result of great bodily or mental shock, and in such cases there need be no hesitation as to the use of the catheter. Occurring in a neurasthenic or hysterical subject, it is but a part of the nerve disorder, which must be treated on general principles, and on no account should the catheter

be used until the retention has lasted so long as to compel a local examination. If there is no contra-indication, it is a good plan to use anaesthesia in such cases, to make the examination thorough and once for all, and to insist upon it that catheterisation cannot be repeated. There is no doubt that in many instances a prurient desire for repetition may be established by want of firmness on this point. We must depend for immediate relief on hot hip baths, with opium and belladonna suppositories, or chloral injections (30 to 40 grains) into the rectum.

Retention of urine, from atrophy of the bladder or prolonged habitual over-filling of the viscus, occurs chiefly in the aged, and will require regular catheterisation until the bladder regains its tone, or perhaps for life. Minor degrees of prolapse must be sought for and remedied by supports, and greater degrees may require plastic narrowing of the vagina; and by liberal nourishment the system must be supported, while strychnia, ergot, and even digitalis have a fair trial. Meningitis, myelitis, or other affections of the brain or cord are apt to be followed by paralysis as a part of a general paraplegia, and Skene mentions also inflammation of the lumbar nerves or ganglia, endo-arteritis of the pelvic arteries, lumbar or renal abscess, prolonged use or extreme doses of opium, and blows on the loins, supra-pubic region, or head, as occasional causes of vesical paralysis. All of these may, after a time, as in the male, be accompanied by surface dribbling or *incontinentia peridoeza*. Fevers or other acute diseases may cause temporary paralysis of a similar kind. The catheter is in all these cases the first remedy. The circumstances of the case will determine how long regular catheterisation must be kept up. The treatment of the cerebral, or spinal lesions belongs to the domain of general therapeutics. Strychnia and ergot may prove locally useful, or galvanism by the introduction of a sound, insulated except at its point, may be tried. I have seen two or three cases greatly improved during the use of the continued current in this way, but there was simultaneous improvement in the accompanying paraplegia. Cystitis sets in in too many of these cases, requiring appropriate treatment. Obstruction of the urethra has been referred to above. Sudden retention is very often the first symptom of a growing uterine fibroid tumour, and it may occur from the pressure of other displacements, growths, or exudations, in the neighbourhood. The diagnosis and treatment of these are found in their appropriate places, but if the obstructing mass can be pushed out of the way, above the pelvic brim, this is the first indication to be fulfilled.

DISPLACEMENTS OF THE BLADDER.

This organ may be displaced upwards, backwards, forwards, laterally, or downwards, and the symptoms of such displacement will, according to circumstances, and in varying degree, be hypericsthesia, or retention, or incontinence of urine. Careful examination must determine the exact cause. Uterine tumours, pelvic exudations, the contraction of pelvic adhesions, and above all, prolapse of the vaginal wall (cystocele), are the foremost of these, but ovarian tumours, if adherent to the bladder, may drag it upwards, growths deep in the pelvis may push it upwards, the retroverted, or anteverted, or flexed uterus may push it backwards or forwards, and it may form part of a ventral hernia, after abdominal operations or severe straining of the accessory forces in labour, or even of large inguinal protrusions of the ordinary kind. The treatment of all these affections, and consequently of the vesical displacement, is referred to in its appropriate place.

EVERSION OF THE BLADDER.

This rare condition of matters may occur congenitally, or as a result of congenital deformity, through the pervious urachus, or through larger ventral fissures, which include the external abdominal wall. It has been met with also in later life as a gradual protrusion through the dilated urethra.

EXFOLIATION.

Exfoliation of the whole, or of a large portion, of the mucous membrane, occasionally, though very rarely, occurs during acute cystitis. In nearly every case observed there has been excessive distention of the viscus, probably interfering with the vascular relations of the layers of its walls. For further notice of the two preceding rare complications, I must refer to Skene, or to Barnes (*Lancet*, Jan. 2, 1875), quoted by him.

The subjects of HYPERTROPHY, ATROPHY, occasionally with rupture, and PERFORATING WOUNDS of the bladder, belong also to the domain of general surgery, allowance being made for the preponderance of obstructive forces leading to hypertrophy in the male, and for the greater amount of involutional changes accompanying child-bearing in the female. FISTULÆ have also been discussed in the chapter on vaginal affections as fully as seemed necessary.

HEMORRHAGE FROM THE BLADDER.

In all cases of hæmorrhage from the genital passages, it is necessary to make sure that the source is not vesical, a matter of no great diffi-

culty if, in all doubtful cases, a visual inspection of the parts as well as of the discharge is made. It may serve a useful purpose to merely enumerate here the sources of vesical or urethral hæmorrhage, apart from renal affections. From the bladder it may be due to (1) hæmorrhoidal conditions, (2) local congestion, (3) separation of the mucous wall in inflammation, (4) intense general abdominal congestion, (5) fungosities, malignant or otherwise, (6) calculus or foreign bodies, (7) purpura, and the hæmorrhagic diathesis (hæmophilia), or (8) zymotic or malarial diseases. From the urethra hæmorrhage may be due to (1) lacerations, (2) foreign bodies, (3) vascular or polypoid growths, (4) varix, and (5) acute urethritis.

It is vain to attempt here a differential diagnosis of these varying conditions. For the most part they are common to the male and female, and are nowhere more fully treated of than in the *Clinical Lectures on Diseases of the Urinary Organs*, and other writings of Sir Henry Thompson.

CALCULI AND FOREIGN BODIES IN THE BLADDER.

To discuss the chemical nature and origin of calculi forms no part of our programme, and sufficient has already been said as to the occasional introduction of foreign substances from without, or, by perforation, from within the body. Catheters, or portions thereof, hair-pins, bodkins, pencils, and pipe stems, more or less encrusted with calculous material, figure among the list.

The symptoms of all such cases are similar—hyperæsthesia in varying degree, with occasional incontinence, tenesmus, and pain before and after urination, but chiefly the latter, and occasionally hæmorrhage. Chronic cystitis arises after a time, with its accompanying signs, and, if relief be not obtained within a reasonable time, retrocession of inflammation takes place to the ureters and kidneys, leading to pyelitis, uremia, and general embolic disease. The symptoms above mentioned lead speedily to a careful examination and inquiry into the history, and these can hardly fail to elicit a correct *diagnosis*. A neoplastic growth must be distinguished, if there is a doubt, by observing its softer consistency and fixed position, and by the introduction of the finger *per urethram*. The endoscope requires great familiarity with its use to be of any service.

Treatment.—Small calculi or foreign bodies, may be removed *per urethram* after dilatation. There is much room for ingenuity in the use of appropriate forceps. In the case of elongated bodies, the finger in the vagina can do wonders in the way of placing them in suitable position for section, or extraction through the urethral canal. Lithotripsy is less seldom necessary than in the male, on account of the greater facility of extraction. It should never be performed when a

calculus becomes an obstacle to labour; the multiplication of cutting edges might prove fatal if rapid labour ensued. With large calculi or other foreign bodies, removal by vesico-vaginal incision is the most effectual remedy, especially if the case is complicated with persistent cystitis. We shall see that a fistulous opening thus artificially made is one of the remedies for intractable cystitis, and the operation will be more fully noticed under that heading.

CANCER OF THE BLADDER.

Sooner or later, if the patient live long enough, cancer of the uterus or vagina involves the walls of the bladder giving rise to innumerable fistulae, and thus adding immeasurably to her misery. But primary cancer or sarcoma is very much more rare, although examples of every variety are met with, especially the encephaloid and papillomatous. *The symptoms* are in no way pathognomonic, consisting of pain, hæmorrhage, and constant and difficult urination. The usual seat being about the trigone or base, the mass may be distinguished by vaginal touch, but differentiation from other neoplasms, or non-malignant growths, can only be made by the microscopic examination of the urinary sediment, or of portions scraped away through the speculum by a small curette. *The treatment*, with the exception of soothing by opiates, and catheterism when necessitated by obstruction, is, I fear, *nil*. Bearing in mind, however, that several eminent authorities maintain the non-malignant character of, at any rate, a certain number of cases of papillomatous growths, it is permissible, with the intelligent consent of the patient, to attempt extirpation of the mass. This can be satisfactorily accomplished only by vesico-vaginal incision of sufficient extent. Fischer (*Centralblatt für Gynäkologie*, No. 41, 1882) has experimented with some success on partial resection of the bladder in the dog, but all evidence yet obtainable shows that such comparative surgery is unreliable in its results when applied to the human subject. I have no personal experience on any part of the subject, but the ureters seem to me to present an almost insurmountable obstacle to resection, where alone it could be of service. Of other foreign substances or neoplasms found in the bladder, we can only enumerate—

CYSTS, POLYPI, TUBERCLE, AND CERTAIN PARASITES.

Cysts or their contents—hair, teeth, sebaceous matter, &c.—when found in the bladder, are almost invariably of outside origin, although it cannot be denied that the vesical mucous follicles may, like those elsewhere, develop indigenous tumours.

Polypi, or polypoid hypertrophy of the mucous tissue, of varying

density and bright mulberry-form appearance, and even true fibromyomata, are from time to time encountered and are described in scattered literature, and small *tubercular growths*, similar to and generally accompanying those in other organs, are also described. In all these the *symptoms* are practically the same as those of cancer or foreign bodies, in varying degree; they are not differential between the malignant and non-malignant offshoots. To make an accurate diagnosis the growth or tumour must be got at, by endoscope or speculum if possible, by the finger at any rate, and the urinary deposits or scraped portions must be carefully examined microscopically. I cannot quite say with Skene that thus "one may be able to tell exactly what kind of a growth you have to deal with," but one should often be able to probably eliminate carcinoma.

Treatment, in all cases, is by removal through the urethra, or through an artificial vesico-vaginal fistula. Polypi are prone, like cancer, to affect the base of the bladder, and are therefore the more easily got at. If a fine pedicle exists, twisting by forceps may suffice, curetting may be required if the mass is too soft. Tying the pedicle and allowing the tumour to slough off, or separating it by galvanic cauter, are measures easy to express on paper, but most difficult of execution, except through an incised bladder, and by a skilled expert. Tubercles, of which I have had no experience, to my knowledge, would, I think, be best left alone.

As to *Parasites*, a very considerable number have been known to find their way, either through fistulae or by the ureters or urethra, into the bladder. The *Bilharzia hematobia*, the *Strongylus gigas*, the *Pentastoma denticulatum* (probably a larva), and the *Distoma hematobium*, particularly affect the urinary passages, for the most part in tropical, or sub-tropical regions, however; and hydatids may appear, as in all other parts of the body. The *symptoms* are those of irritation and sometimes of hæmorrhage, often preceded by nephritic colic, due to the passage of the worm through the ureter. The endemic hæmaturia of some countries is the result of the presence of *Bilharzia hematobia*.

Treatment.—When detected, the offender must be removed, if possible, by forceps, through the dilated urethra. Preliminary poisoning by injection might be advisable, but I am not aware what substances, harmless to the bladder, would suit the case of each of the above parasites. My colleague, Dr William Roberts, has succeeded in destroying certain rare bacilli of the bladder by the internal administration of salicylic acid. Calculi may form around vesical parasites, living or dead.

ACUTE CYSTITIS.

I have left until the last the important subject of inflammation of the bladder, acute or chronic.

Acute cystitis is fortunately not of very common occurrence, although sub-acute exacerbations of the chronic form frequently arise. The mucous membrane is for the most part alone attacked, but occasionally the inflammation spreads to the submucous or muscular tissues, or even to the peritoneal covering.

Causes. One of the most common of these is gonorrhoeal extension. Next in order we have the occurrence of severe and protracted labour with retention of urine, direct injuries or blows on the pelvis or abdomen, the use of septic catheters, sounds, or other instruments, decomposing urine, or the purulent discharges of pyelitis acting on an already congested or otherwise unhealthy viscus, calculi or foreign substances, extension from neighbouring organs, as from pelvic cellulitis or acute metritis, and the abuse of certain drugs, especially cantharides or turpentine. Cystitis may occasionally result also solely from long retention of urine. A somewhat more rare cause is the bursting into the bladder of a pelvic abscess, or of an ovarian or other cyst. Cold or exposure seldom excites the strictly acute form, but it may do so. Retroverted gravid uterus, with pressure on the urethra and retention of urine, occasionally figures as a cause.

The symptoms are intense local pain, with constant tenesmus and sensation of residual urine. In very acute attacks this symptom may be perfectly agonising. There is always more or less systemic disturbance, as shown by pulse and temperature. Slight hæmorrhage is common at the commencement, and it may be severe in cases of local injury. The urine may at first be normal in appearance, or of high specific gravity and acid, but it soon tends to become alkaline, and of lower density, as ammonia is evolved in the retained fluid, and the lower specific gravity is retained in sub-acute recrudescences. Pain is said to be chiefly experienced when pressure is made on the abdominal aspect, and not when made *per vaginam*, but I have not myself found this distinction hold good to any extent. One of the most serious sequelæ is the occurrence of exfoliation of the mucous wall, and this, as above stated, occurs chiefly in those cases where great distention has preceded or accompanied the attack. The occurrence of nephritis or pyelitis, due to backward extension of the inflammatory process or to pressure on the ureters, is a sequel rather of the chronic than of the acute form.

The diagnosis of acute cystitis can seldom be matter of doubt, but nevertheless a careful examination of the pelvis should always be made.

to ascertain how far it may be part of a general inflammation, or due to local pelvic mischief, uterine displacements, &c.

Treatment.—The relief of pain and tenesmus is the first object. This can be best effected by the constant use of suppositories of morphia combined with belladonna or atropin. External local applications are not of much use, but if the patient can endure the fatigue, a prolonged hot hip-bath affords relief. Bland mucilaginous drinks—whey, milk, barley-water, or linseed tea—are indicated. During the acute stage very little, if any other, nutriment is desirable. I have seen a few leeches on the hypogastrium give very immediate relief, explain it as we may. Saline purging is strongly recommended by most authorities, but in the acute stage, at any rate, may easily be overdone. Hyoscyamus is a remedy of considerable value if given in sufficient dose (℥ss. to ʒi. of the tincture); hyoscyamine is dangerous. The urine, if very acid, indicates the use of the alkaline effervescing waters. Catheterisation, often so useful and necessary in the chronic form, is fraught with so much pain that it should only be used if there is positive retention, with great caution, and hardly ever if the urine is acid in reaction and clear. The disease, if there is no general septic poisoning or peritoneal extension, may thus sometimes be rapidly cured, but it more often subsides into the chronic form. Excision to any great extent will require dilatation of the urethra, and perhaps gentle extraction by forceps.

CHRONIC CYSTITIS.

This is of but too frequent occurrence, commencing occasionally in the violent and acute form, with pyrexia, &c., but more commonly creeping on gradually.

The mucous membrane is congested, and the whole wall soon becomes rugose. The epithelium is freely shed, and may even be necrosed and expelled in large patches, as after acute disease. Sir Spencer Wells and others have narrated cases of this kind, and complete regeneration may follow. Ulceration of the wall of the bladder in patches may follow, aggravating and prolonging all the symptoms, and occasionally, although rarely, this leads to perforation.

Cause.—These are the same as those of the acute form, acting less violently, and the affection may also, and frequently does, arise from chronic gleet, from the presence in the bladder of calculi or foreign bodies, from cancerous or tubercular disease of the organ, from irritating internal medicines such as turpentine or copaiba, from habitual over-retention of urine, from chronic alcoholism, from paraplegia, complete or partial, from injudicious vaginal injections or manipulations, from the pressure of adjacent tumours or of an anteverted uterus, from the gouty diathesis,

and perhaps from several other causes, seeing that many cases cannot be traced to their real origin.

The symptoms are those of pain in micturition, irritability, spasm, or pain on moderate retention, and frequency of urination, all in very varying degree. Abundance of toughened mucus, and more or less epithelium, pus, and frequently also blood-cells, are found in the urine, which speedily tends to become alkaline and phosphatic, although the latter condition may for a time exist without the former. The specific gravity is usually low. At first the urine may require to stand some time before the slight deposit of pus takes place, although it will, of course, be albuminous, but afterwards the thick, ropy, mucous, and gelatinous urine is perfectly characteristic, as is also its foetid ammoniacal smell. Ulceration aggravates all these symptoms. If the bladder is examined digitally under anaesthetics, as becomes necessary in prolonged and aggravated cases, the rugose and contracted state of its walls, and the hypertrophy of its muscles become manifest, deposits of phosphates give a sensation of roughness or sandiness, and the smooth portions, denuded by exfoliation or ulceration, are thus rendered more apparent. This course of symptoms is apt to be persistent for very long periods, or, in severe cases, the patient may sink into a state of cachexia or chronic septicaemia, or the affection may terminate in extravasation of urine or pelvic abscess. Extension of mischief too frequently occurs upwards, leading either to occlusion of the ureter or pyelitis, and uræmic poisoning leads to the death of the patient in a typhoid condition. These worst symptoms sometimes supervene with painful rapidity on an otherwise apparently slight case.

The treatment of chronic cystitis is most aggravatingly difficult. Temporary improvement may easily be effected, but relapse constantly occurs. Yet the disease is so frequent that the practitioner must be provided with many resources.

The diet must, throughout, be bland and unstimulating, yet nutritious; milk will always constitute the chief element. For relief of chronic pain, hyoscyamus or belladonna must be chiefly relied upon. Opium is objectionable after the acute stage, both from the dangerous habit, the formation of which is risked, and on account of its tendency to induce constipation. Mild aperients, such as the pulvis glycyrrhizæ comp., the electuary of senna, or the various salines, are required. Diluents of the urine, such as are recommended for acute cystitis, must still be freely used, and the decoction or infusion of triticum repens, buchu, and uva ursi have undoubtedly a favourable action in promoting aqueous urination, although the recent infusion of digitalis (℞ii. ad. ℞iv.) is superior to them all in this respect, and exerts the tonic vascular influence of the drug at the same time.

urine being now almost always alkaline, or verging on alkalinity, must be corrected, as far as internal remedies will do so, in this respect. The mineral acids are most generally relied upon. I have found benzoic acid, as prescribed by Emmet for the preparation of vesico-vaginal fistulæ for operation, the most active agent in diminishing the alkalinity of cystitic urine—two drachms of benzoic acid, and three drachms of borate of soda, to twelve ounces of water, a tablespoonful further diluted, to be given frequently. Slight cases of cystitis will, the cause being removed, sometimes yield to this treatment, if perseveringly used, but injections into the bladder are generally required, either for the purpose of washing away the tenaceous deposits, or of acting upon the mucous membrane. For this purpose, the double catheter is always required. It is a mistake to trust to the single one. Pure water, at a temperature of 98° or 99°, will fulfil the first indication—for the second, various agents have been used. That which is generally known as boro-glyceride, in the strength of 1 in 40, is one of the most effective. The saturated solution of boric acid, two or three times diluted, is also very useful. Dilute nitric acid (5i. to the pint), tincture of iodine (5i. to the pint), quinine (1 gr. to the ounce), and carbolic acid (1 in 80 to 1 in 60), are also valuable remedies, and it will be seen that they are nearly all agents which counteract the development of septic influences. Before using any of these agents, the bladder should be carefully and gently washed with water alone, by the double catheter, perhaps more than once; the medicated fluid is then injected slowly, say two or three ounces, and after a short time is either voided or washed out again. I have no faith in the use of setons or blisters applied to the hypogastrium, or in the painting of the vaginal wall with iodine: the latter step may do harm, by adding to the irritation which has led to the cystitis. The question of catheterisation is perhaps the most important one in the treatment of chronic cystitis. In some cases the irritation and consequent tendency to ineffective urination are so great that one is impelled to use the catheter with too great frequency. In others, the irritation not being excessive, or the patient being an uncomplaining one, viscid alkaline secretions may be allowed to accumulate for the want of it. It is well, therefore, in the slightest cases to make sure occasionally of the perfect emptying of the bladder in this way, but when the urine is distinctly ammoniacal, especially if it is viscid, the catheter should be used at regular intervals—every four, six, eight, or twelve hours, according to the urgency of the symptoms. I prefer this to the permanent retention of any kind of catheter if the patient can have the requisite attention, or can catheterise herself. The character of the urine drawn will indicate the necessity for washing out the bladder.

There are two methods, of modern introduction and of somewhat heroic character, which have been found useful in the treatment of obstinate cases of cystitis; they are based on the same idea, viz., that of giving rise to temporary incontinence of urine, so that the inflamed or ulcerated surface of the bladder may be free from all irritation by its contents. Thorough dilatation of the urethra by Simon's dilators, or even digitally, to such an extent as will not allow of speedy recovery, will have the desired effect, but the danger of permanent incontinence is so great that the remedy seems to me to be almost worse than the disease. The constant wearing of a soft catheter fulfils the same indication, but too often creates an equal amount of irritation itself. The other plan, although it seems more formidable at first sight, is really less dangerous, in skilful hands, to permanent comfort. It consists in making an opening through the vesico-vaginal wall, an artificial and voluntarily produced vesico-vaginal fistula, which, if it does not close spontaneously, can be closed by operation, after the required results are obtained. Marion Sims, in 1858, advised Emmet to leave open an artificial vesico-vaginal fistula, through which he had extracted a stone, for the purpose of leaving the bladder free to recuperate itself from the effects of chronic cystitis. In 1861, Emmet made a fistula of the kind for cystitis alone, publicly reporting the case in 1868. On this side the Atlantic, Mr Lawson Tait described the practice in the *Lancet* of 1870, and attributes the knowledge of its value to an operation performed by Sir James Simpson many years before. Simon advises a T shaped incision of the vagina, the transverse part in front of the os uteri, the other extending forwards from it, and through this the bladder is hooked down and incised; thus at any rate is his operation for removing foreign bodies. Emmet makes a direct longitudinal incision, and stitches the edges of the vagina and bladder together, while more recently the actual cautery knife has been used, avoiding hæmorrhage and leaving less tendency to too early spontaneous closure. The wound is ultimately treated as an ordinary vesico-vaginal fistula. I can speak from no personal experience, but I should fear danger to the ureters from Simon's plan. Perineal section in the male offers but an imperfect analogy. The good results in the cases I have seen recorded are so far short of expectation that I advise the practitioner to leave the matter yet awhile in the hands of experimenters.

The Rectum.

The maladies of the rectum seem to be, in actual practice, less intimately connected with the work of the gynaecologist than those of the bladder and ureters, nevertheless it is advisable to advert to some of

them. Anatomically, the rectum is, in its middle portion, connected with the vagina by some loose cellular tissue, for $1\frac{1}{2}$ to 2 inches of its length. Below this it diverges, running backwards to the anus, while the vagina is directed forwards, between them lying the triangular perineal body. The upper part is surrounded by peritoneum, and between it and the vagina we have the lower end of the important Douglas's pouch (fig. 5). It is well shown in Hart and Barbour's work, so prolific in careful anatomical descriptions, that pressure from the abdomen in the direction of the axis of the pelvic brim is in accord with the axis of the outlet of the rectum, thus facilitating the daily process of defecation, while it is at an angle with that of the vagina, necessitating in labour the various rotating and accommodating processes, and partly accounting for the retention of elongated vaginal pessaries during defecation. The sensitiveness of the lower part of the rectum leads to the necessary calls of nature, and accounts for the pain of many rectal affections, while the insensitiveness of the upper portions allows of much accumulation of feces, and sometimes of the existence of organic disease with little discomfort.

EXAMINATION OF THE RECTUM.

On inspection we note the existence of external tumours or protrusions— hæmorrhoids, fistule, and extensive fissures, and we can by the finger discover any surrounding hardness or spasm of the sphincter. This can be quite satisfactorily accomplished, as can any other ordinary examination, in the left lateral position, a position recommended also by Mr Allingham (*Diseases of the Rectum*) for the male patient. *Rectal toucher* is practised with the forefinger of either hand, the finger being well lubricated, and the nail coated below with soap. I must confess that I can seldom make much of the plan, so frequently recommended for conjoint examination, of introducing the forefinger into the vagina and the middle one into the rectum. In spite of some inevitable awkwardness I can



FIG. 207. — Rectum Speculum.

succeed better by the two forefingers, their palmar aspects being opposed. The most satisfactory *speculum* is a small glass truncated instrument, incomplete on one side (fig. 207), together with one of the usual vaginal shape. There are various valvular instruments in occa-

sional use, but they need form no part of an ordinary armamentarium. By passing one or two fingers into the vagina, the anterior wall of the rectum can be easily everted and inspected, in those who have borne children. Sir James Simpson used to lay great stress on this, which is called in America Storer's method, but I do not know whether he taught it to, or was taught it by, Dr Storer of Boston, who was attending his lectures at the same time as myself. I have formerly referred to Simon's method of introducing the whole hand (p. 11). Its dangers are certain, even when the hand is small; but Allingham has thus successfully stretched a band which was contracting the gut at the brim of the pelvis, and the method is justifiable in extreme cases of stoppage believed to be of this kind. Under anaesthesia, the anus can easily be dilated to a very considerable extent, and this is one of the most satisfactory methods of curing anal fissure. It need hardly be said that before all rectal examinations the bowel should be thoroughly emptied.

EXAMINATION THROUGH THE RECTUM.

No difficult case of disease of the pelvic organs or tissues can be thoroughly investigated without an examination through the rectum. We can thus sometimes reach higher than by vaginal examination, and get behind many diseased or displaced structures that cannot be otherwise reached. The combination of rectal with abdominal or vaginal touch has already been explained. The student should early familiarise himself with the normal condition of the cervix uteri and other parts when felt through the rectal wall. In atresia vaginæ and vaginismus, or with young virgins, rectal examination may alone be possible. The state of the posterior wall of the uterus, Douglas's pouch, the pelvic ligaments behind the vagina, the broad ligaments and Fallopian tubes, the ovaries, ovarian tumours or their pedicles, and of many other parts which must be investigated, can only be satisfactorily explored in this way. Much assistance may sometimes be given by drawing down the uterus with vulsellum or hook while the rectal examination is made. The diagnosis of elongated cervix from prolapse, of polypus from inversion, of retroversion complicated by adhesions, of other impediments to the replacement of retroflexions, of extra-uterine pregnancy, or of hæmatocele or pelvic exudations, is especially facilitated by rectal examination, particularly if tense abdominal walls or *embonpoint* prevent the ordinary bi-manual examination.

To illustrate the mutual relations of rectal and utero-vaginal symptoms or disorders, it may be mentioned that while Emmet lays special stress on fissure of the anus as causing, by reflected irritation, disturbance of the pelvic circulation, and so leading to dysmenorrhœa, uterine

prolapse, leucorrhœa, and ovarian congestion. Allingham dwells with equal force on the impossibility of curing many cases of rectal fissure while these gynecological affections are unremedied. Fissure of the anus is a not uncommon source of vaginismus and dyspareunia. Uterine and pelvic disease frequently lead to hæmorrhoids and to otherwise unexplainable rectal hæmorrhages, and so forth. The rectum has also on rare occasions been utilised for the removal of ovarian tumours. Such an operation was successfully performed by my friend Mr Stocks of the Salford Hospital (*Brit. Med. Jour.*, October 1875, p. 487).

DISEASES OF THE RECTUM.

A very cursory glance at some of these must suffice.

Rectocele has been already sufficiently noticed.

Recto-vaginal Fistula has also been mentioned, but I may just state here that in incurable vesical and urethral fistula, closure of the whole vulva, preceded by an artificial recto-vaginal opening, has succeeded as a useful palliative in the hands of Goodell; it allowed the rectum, with its strong sphincter, to become part of one large clonca.

Constipation.—This symptom constitutes so frequent an element in the causation or resulting consequences of female diseases that some mention of it is here required. It is almost incredible to what an extent fecal accumulation may amount, and it requires always to be borne in mind that some mucous diarrhœa may coexist, the fluid evacuations finding a way through a channel in the hardened mass (diarrhœa paradoxæ). When not due to habitual neglect or to digestive disorders, constipation may be the result of pressure on the rectum by a retroverted or retroflexed uterus, by fibroid tumours, by exudations of pelvic lymph or blood, or by subsequently contracting bands, all of which should be sought for when ordinary remedies fail. In its turn it may give rise to exacerbations of all the ordinary symptoms of gynec disease, or may be the cause of rectocele and eventually of uterine prolapse. No uterine disease can be fairly treated while habitual constipation lasts; it aggravates pelvic hyperæmia and complicates all displacements. Regular injections of tepid water, if not contra-indicated, and the administration of the mildest purgatives available, are therefore indicated in many, if not most, chronic uterine affections. The pulvis glycyrrhizæ comp., or still better the pulvis liquoritæ comp. of the German Pharmacopœia, the confection of senna, sulphur, or the milder saline waters, best fulfil this condition. The preparations of aloes, with or without iron or myrrh, are of great value in sluggishness with amenorrhœa, but must be avoided whenever there is local congestion.

Fissure of the Anus has already been more than once referred to as

a cause or consequence of uterine disorder, ovarian irritation, or vaginal spasm. Its action on the anus is very similar to that of most of the causes of vaginismus on the vulva. I have met with it as a cause of vaginismus when the intolerable pain at, and long after defecation, was almost absent. It may be divided in its whole length, cutting well into the muscular fibres, or may be treated by forcible dilatation of the rectum by the thumb. Nitrate of silver and other local applications are seldom of use.

Pruritus Ani often coexists with pruritus vulvæ, or may occur separately. It is sometimes a purely neurotic affection, but many of the causes of pruritus vulvæ may conduce to its origin (p. 41). I have seen the symptom localised in the anus when the cause and successful treatment were evidently gynecic. There is little to add to the treatment given under pruritus vulvæ. The oleum staphisaguriæ (1 to 7 of vaseline) and white precipitate ointment, I have found of most service as local remedies, but the search for and removal of local or constitutional causes are all important.

Hæmorrhoids. Few women have many children, or suffer from any of their own special ailments which involve pelvic congestion or backward uterine pressure, without suffering in some degree from hæmorrhoids, external or internal. The symptoms and signs of these should be familiar to every practitioner. They frequently disappear on the cure of the uterine or other mischief, aided by mild laxatives as above recommended, and by the application of an ointment (acid gallic, gr. xx.; morph. acet., gr. v.; vaseline alb. 3i.), thus, for obvious reasons, is preferable to the filthy ung. gallæ c. opio. For further operative treatment, see Allingham, (*op. cit.*), or other works on the rectum.

Prolapse of the Rectum. The mucous membrane alone may prolapse, or protrusion of the whole thickness may occur. The affection is pre-eminently one of childhood, due for the most part to overstraining, but, owing to the same cause during childbirth, to habitual constipation, and to the numerous causes of relaxation or downward pressure, it is not infrequent in adult women. In severe cases the possibility of the inclusion of Douglas's pouch, with hernial contents, is not to be forgotten. Allingham states that the pointing of the opening of the gut towards the sacrum is diagnostic of this complication. If careful and constant reposition, attention to the bowels, and the wearing of an anal caoutchouc air pad, do not cure the disease, as they may at an early stage, the application of pure carbolic acid or of the actual cautery may produce sufficient shrinking of the gut, or plastic operations, somewhat similar to those for prolapsus vaginæ, may be necessitated.

Fistula in Ano. - An ordinary fistula of this kind, well removed from

the vulvar and vaginal tissues, is treated in the female as in the male, but, owing to the vascularity of the parts, and the relation of the perineum, the treatment by elastic ligature is specially useful when the fistula opens much in front of the anus. I have an impression that spontaneous cure more often occurs in the female than in the male, and also that the affection is much less common in the former. *A priori*, one would, I think, have expected the reverse.

I do not think that anything would be gained by referring here to cancer, polypus, stricture, rodent ulcer (?), or other affections of the rectum.

APPENDIX.

THE SYMPTOMS AND SIGNS OF PREGNANCY, FROM THE POINT OF VIEW OF
DIAGNOSIS AND DIFFERENTIATION

IN considering the various affections of the female sexual organs, whether in the unimpregnated condition or otherwise, we have so often had occasion to refer to the state of pregnancy as influencing our diagnosis and consequent treatment, that it seems to be advisable, as has elsewhere been promised, to insert an appendix, giving, in more or less tabular form, the symptoms and signs of pregnancy, from a differential point of view. When the practitioner finds an apparently enlarged uterus, or disordered menstruation, or abdominal distention, or any of the functional disturbances which so often accompany pregnancy, it is his duty, no matter what may be the social position of his patient, or her marital relations, to satisfy himself that she is not pregnant, before proceeding to any active treatment, or resorting to the use of some of the methods of physical diagnosis, especially of the uterine sound.

Symptoms and Signs of Pregnancy.

1. SUPPRESSION OF MENSTRUATION.

In the perfectly normal condition of pregnancy this is sudden and apparently causeless, lasts during the whole period of gestation, and for some months afterwards during lactation.

Exceptions.—One or more menstrual periods, generally with a slighter amount of discharge, may occur subsequently to the commencement of pregnancy. Very rare exceptions of menstruation during the whole of pregnancy, of a first pregnancy without previous menstruation, and of other abnormalities in this respect are recorded.

Diagnostic Value.—As leading to the strongest presumption of pregnancy this sign is invaluable, but without corroboration by physical signs it is otherwise valueless. It may be due to any one of the causes mentioned at page 162. Gradual cessation is in favour of disease rather than pregnancy, but the final stoppage may, nevertheless, be due to the latter state. Spurious pregnancy, and pregnancy along with

disease for which it might be mistaken, must always be borne in mind. When suppression occurs, never use diagnostic or therapeutic means liable to lead to abortion, until physical signs, on their comparison with dates, permit of the exclusion of pregnancy. Beware of intentional mis-statements as to the suppression or non-suppression of the catamenia, or even of imitation of the natural discharge.

2. SYMPATHETIC OR PRESSURE SYMPTOMS OF PREGNANCY.

Almost endless in number. The more common affections are dyspepsia, vomiting (especially in the mornings), salivation, tic, shootings in the breast, cephalic congestion, plethora, chlorosis, and insomnia—many of these being due to the hyperinotic and other not yet clearly ascertained changes in the blood of the pregnant woman. From pressure we have the bladder, pelvic vessels, pelvic nerves, rectum, abdominal viscera, diaphragm, and abdominal walls affected, leading to dysuria, hæmorrhoids, varix, sciatica, crural and other neuralgias, constipation, tenesmus, dyspnoea, &c.

Exceptions.—Every symptom thus noted may be absent in pregnancy, and the variations in their relative frequency are endless. Their connection with successive stages of pregnancy is mainly of importance to the obstetrician.

Diagnostic Value.—Practically nil. In uterine or ovarian disease we may have, although less frequently, any of the sympathetic symptoms, and those due to pressure may be caused by any form of tumour affecting the pelvis.

3. KYESTEIN.

On the second or third day after it is passed the urine becomes hazy, a pellicle, at first thin, but afterwards thicker and opaque, forms on the surface. In twenty-four or forty-eight hours this slowly breaks up and falls to the bottom as a flocculent deposit. The process is again repeated, and decomposition then sets in. The pellicle is a nitrogenous substance, secreted by the kidney, probably in connection with the hæmic hypernæmia above referred to.

Exceptions.—At the beginning and end (first and last months) of pregnancy, this phenomenon is generally absent, and it may be so during the whole period. It has also been met with in the non-pregnant state, and in the male.

Diagnostic Value.—Much diminished by the facts just mentioned. In a difficult case of diagnosis the well-marked presence of the sign would so far turn the scale in favour of pregnancy as to lead for a longer time to non-interference in accordance with the presumption. In extra-uterine pregnancy its occurrence would probably be of some con-

firmatory diagnostic value, although I can find no special observations on the subject.

4. MAMMARY APPEARANCES.

From the second month or thereabouts the breasts gradually increase in size, their veins become distended, the nipple increases in prominence and becomes darker, together with a surrounding areola. Later on, watery milk is secreted in small quantities, and still later, silvery streaks appear on the distended skin. A more important characteristic is the appearance of small soft tubercles in the areola, and the occurrence of a second areolar zone, paler than the inner one, also mottled with still paler spots.

Exceptions.—In *blondes* these changes may be hardly observable, even to the last; in *brunettes* the mere darkening of the nipple and areola is common in the absence of pregnancy or disease.

Diagnostic Value.—In a multipara these signs are of little diagnostic value, they may remain scarcely changed from a former pregnancy. When previous pregnancy can be eliminated, the complete development of *all* the characteristics mentioned is almost certainly diagnostic of advanced pregnancy. I once saw them well marked in a professed nullipara, in connection with an ovarian tumour, but discovered afterwards that there had been a previous clandestine miscarriage. The slightest alterations of the breast must never be relied on for diagnosis. They may appear in connection with any form of uterine or ovarian disease, and, even when the appearances are typical of pregnancy, there will always be the necessity for, and the possibility of, checking fallacies by examination of the uterus itself.

5. APPEARANCE OF THE ABDOMEN.

During the first six weeks it sinks rather than rises; afterwards it becomes gradually distended from below. White silvery cracks from distention may be apparent in the later months. These, however produced, are permanent. Deposits of pigment along the linea alba, around the umbilicus, and elsewhere, are common. The umbilicus is at first depressed, then becomes level, and towards the last is often slightly protruded.

Exceptions.—None of these symptoms are universally found in pregnancy except the gradual distention of the abdomen.

Diagnostic Value.—This, taking the signs *per se*, is very slight; indeed, the distention, the discoloration, and the cracks, may all be exactly simulated in cases of tumour, or even of ascites, although with the last mentioned distention is usually more prominent in the flanks and flatter in front.

Note.—The abdominal distention due to pregnancy is very commonly greater towards the right side.

6. PALPATION OF THE ABDOMEN.

About the tenth or twelfth week a small rounded swelling is first distinctly felt above the pubes. This increases at a tolerably definite rate. It reaches quite to the umbilicus about the sixth month, about two inches higher during the seventh, and finally to the ensiform cartilage. It is central, but often with a distinct tendency to the right. Its consistency is firm but not hard, but varies much according to the amount of liquor amnii. After mid term, distinct contractility may often be felt if it is kneaded or irritated by a cold hand, a very important sign. Braxton Hicks was the first to demonstrate that these contractions also occur normally, without external irritation, at intervals of five or ten minutes, and may be considered as a regular physiological phenomenon of pregnancy. Their perception is therefore of the highest possible positive diagnostic value. But negative evidence is not equally afforded by our inability to detect them. Percussion dulness corresponds with the area of the tumour. Fluctuation is quite apparent when the liquor amnii is excessive. In the last two or three months the limbs of the fœtus can generally be clearly made out by the hand.

Exceptions.—Although the rate of growth of the uterus is gradually progressive, and pretty closely corresponds to the rate just mentioned, yet very sudden apparent increase sometimes occurs, owing to changes of position of the uterus in relation to the other viscera.

Diagnostic Value. In very stout women it may be impossible to make out the form of tumour with sufficient accuracy to be of any value. A somewhat soft fibroid tumour, or a resistant multilocular ovarian one, may perfectly simulate the gravid uterus in form, position, and consistency, therefore no diagnosis can be founded on the consideration of these alone. Uterine distention in hematometra, hydrometra, or pyometra, may also be undistinguishable from pregnancy by palpation alone; but the discovery of congenital or acquired atresia, and the history of the case, will suffice for differentiation. Careful percussion will eliminate spurious pregnancy, physometra, and ascites. The earlier stages of pregnancy are indistinguishable *per abdominem* from enlargements of the uterus due to chronic metritis, subinvolution, or congestion. The rate of growth, if it can be ascertained, and it must sometimes be waited for and watched, is rarely the same in any form of tumour or uterine enlargement as in pregnancy. It may be laid down, however, as an axiom, that no positive diagnosis, confirming or setting aside the existence of pregnancy, can be based on the manual

examination of an abdominal tumour, unless it be confirmed by a careful examination *per vaginam*, or by stethoscopic signs.

7. FÖTAL MOVEMENTS.

These, when described as felt subjectively by the patient herself, are of very little importance. It is otherwise when they are felt objectively by the practitioner. In advanced pregnancy they may be felt and seen so distinctly, that no possible doubt can arise as to their nature. During the fourth and fifth months they are more indistinct, and may be simulated by movements in the intestines or abdominal muscles. Considerable experience is required to differentiate between these, and the sharp little percussions from within, which follow the application of a rough or cold hand to the tumour in pregnancy. The deliberate rolling over of a more mature child can hardly be mistaken.

Exceptions. The child may be dead, when there will, of course, be no movements, and it has periods of sluggishness, when they are very difficult to excite.

Diagnostic Value.—Clearly felt or seen by an experienced observer, these movements are pathognomonic of pregnancy, but should always be confirmed by vaginal examination. The pregnancy might be extra-uterine.

8. UTERINE CHANGES DISCOVERED PER VAGINAM, OR BI-MANUALLY.

These are infinitely more important than the changes observed by mere abdominal examination. In a primipara the uterus at first sinks lower in the pelvis, and is increased in weight; it is also, or appears to be, more anteverted than normally. To the delicate and experienced touch the os and cervix appear very early to be softer and thicker than usual, and the os is more rounded. If carefully examined bi-manually, the enlargement of the uterus will be found to have the following characters:—It is not equal in all directions, but the organ seems to be enlarged antero-posteriorly, the soft, bulging, anterior wall is easily felt *per vaginam*, and bi-manually it may give a not very obscure sense of fluctuation between the two hands. The posterior bulging is most clearly made out *per rectum*. The rounded and smooth fundus is easily felt, but not so distinctly defined as in other forms of moderate uterine enlargement, while the lower portion of the body, above the cervix, is softer than is the case in any form of uterine tumour or hypertrophy. There is no loss of mobility. As the third month is entered on, the uterus is found to have risen again in position; the cervix uteri often points somewhat to the left, and the cervical softening is greater. In the fourth or fifth

months, the cervical softening is still more apparent, and some appearance of shortening begins to be felt, but the os remains smooth, round, and closed. The globular, lower part of the body is apparent all round the cervix, and is free from the hardness of other enlargements. In the sixth month the so-called shortening and obliteration of the cervix is fairly entered upon. The real nature of this phenomenon is discussed in obstetric works. Henceforth it goes on rapidly and progressively. About the thirty-fourth week the cervix is said to be shortened by one half, and by the full forty weeks it is abolished altogether, there being nothing but a globular uterine mass to be felt, with a thin circular orifice, representing the os and cervix.

In the multipara, the changes in the os and cervix uteri are different. The former may be open from the first, admitting the tip of the finger. Later on, its form varies much, according to the amount of laceration or permanent dilatation which may have been produced by former labours, but the internal os remains closed until towards the end of pregnancy. On the other hand, the walls of the cervix undergo apparent shortening much more slowly towards the end of pregnancy, and may remain quite distinct, and even of cartilaginous hardness, until labour has fairly commenced.

Exceptions.—The precise dates at which these phenomena occur are given with too great exactitude in most obstetric works. In my earlier practice I was constantly misled in this way.

Diagnostic Value.—In order to avoid constant mistakes in diagnosis or treatment, these signs, ascertained by bi manual examination, are priceless, although they necessitate considerable experience for their correct estimation. The thoroughly investigated history of the case will nearly always give a fairly correct idea as to the probability or improbability of pregnancy, and the former must always have the benefit of the doubt. But this probability will amount as nearly as possible to certainty if the changes in the os, cervix, and lower segment of the uterine body just mentioned are found to exist. With regard to large tumours, to be differentiated from pregnancy, none can produce any similar condition of the uterine lower segment except intra-uterine tumours, and with these the absence of signs of a living fetus, the history of hæmorrhages and other usual symptoms, and the rate of growth, will afford the necessary data for correct differentiation. In the case of smaller growths, any approximation to the characteristic signs of pregnancy must lead to prolonged observation, unless the symptoms of pain, hæmorrhage, or constant discharge, are such as to forbid the hope of successful pregnancy and delivery, and to demand procedures for diagnosis or treatment which are incompatible therewith.

9. BALLOTTEMENT.

This sign of pregnancy depends on the fact that the *fœtus in utero* floats in its surrounding liquor amni, and that, if a sudden flip be given to any part of the uterus, the *fœtus* recedes and then rebounds, the rebound being conveyed to the percussing finger as a distinct although slight shock. This sign must necessarily be absent during the earlier weeks of pregnancy, when the *fœtus* is a mere feather weight, and during the last month or two, when the child generally furnishes such a large proportion of the uterine contents. In women with thin abdominal walls, a sudden jerk being given to one side of the uterine tumour, and the finger being retained *in situ*, this rebound of the *fœtus* may often be felt. But the sign is more easily produced *per vaginam*, the flip being given to the uterine wall in front of the cervix. This sensation of the rebound of a floating body can never be mistaken if it has been once or twice experienced.

Exceptions.—A large *fœtus*, with a limited amount of liquor amni, may prevent the realisation of the sign, and a very large amount of liquor amni (hydramnion), with a small or blighted *fœtus*, may, less often, have the same result.

Diagnostic Value.—In the absence of confirmatory signs, ballottement, felt through the abdominal walls, must not be too much relied upon. A pelvic abdominal tumour, say a pedunculated subserous fibroid, or an ovarian solid tumour with long pedicle, floating in ascitic fluid, may give the same results; and if the ascites were limited by adhesions or otherwise, the deception would be greater. So also in the case of multilocular ovarian cysts, the parent or larger cyst may contain a floating progeny. An examination of the uterus *per vaginam* should provide against error in this case. But if the tumour to be diagnosed can be clearly traced to the uterus, the occurrence of the sign, felt *per vaginam*, is a certain diagnostic of pregnancy. No other intra-uterine products—polypi, fibroids, cancer, or the like—fulfil the conditions required for ballottement. The rebound of an ante-flexed uterus, or of a stone in the bladder, are said to have been mistaken for that of an intra-uterine *fœtus*, but this can only have been in the days when bimanual examination was not practised, or not appreciated. Ballottement has one advantage as a sign, viz., that it may be felt whether the child is alive or dead.

10. AUSCULTATORY SIGNS OF PREGNANCY

These are two in number,—

- (a) The sounds of the fetal heart, and
- (b) The uterine, or, as some incorrectly term it, the placental souffle.

The former of these, the sound of the fetal heart, when distinctly heard, is absolutely, and by itself, pathognomonic of pregnancy. I do not enter into the details of its characters, which are familiar to all obstetric students; and, with regard to its *exceptions* and *diagnostic value*, I need only recall the facts that, a dead child has no fetal heart sounds, and that in a certain small percentage—a very small one at the full term—they are inaudible with a living child. An extra-uterine pregnancy may, of course, afford this sign, but there is no other condition of disease which can deceive the listener, if he will take the trouble to make sure that the maternal heart is not beating at the rate of 130 and upwards, as is that of the fœtus.

The *uterine souffle*, on the other hand, although very characteristic of pregnancy, is much more apt to lead to error, if relied upon without corroborative signs. It consists of a single murmur, synchronous with the maternal heart-beat, sometimes continuous and sometimes intermittent. It has every conceivable variety of harshness or softness, or pitch of tone. It is usually heard most distinctly towards the lower part of the uterine tumour, but not always at the same point in the same case. Its site is certainly not always over that of the placenta, and as its situation varies in the same case, and as the placenta is more commonly implanted towards the upper part of the uterus, and as the sound may occasionally be heard after the expulsion of that structure, it is certainly not of placental origin. The death of the fœtus does not necessarily arrest the sound. I do not enter here into its physiological, or occasionally pathological, causation, further than to mention that the uterine curling arteries, the venous dilatations of the organ, and the chlorotic or hyperæmic state of the blood in pregnancy, probably all combine, in varying proportion, to produce a sound which reminds one equally of aneurismal varix, and hæmæ, cardiac, or vascular murmurs.

Exceptions in pitch, site, or positive occurrence are so numerous that they may be considered as possible in every degree.

Diagnostic Value.—Precisely the same sound is often heard in vascular fibroids, and, much more rarely, in the case of ovarian or other tumours. It is clear, therefore, that it cannot be relied on as otherwise than strongly corroborative of other signs of pregnancy. I have often known it render assurance doubly sure, but I have never known it solve a doubtful case which could not be solved without its aid.

There are a few other signs of pregnancy, very interesting in themselves, but which I feel are better left out of account here. The sound of pulsation in the umbilical cord, the supposed differences between the average rate of male and female heart pulsation, the livid condition of the vagina, and the increased pulsation in that organ, are all subjects which are more fittingly discussed in an obstetric work. I

never knew any practical good result from attaching importance to them in diagnosis.

It is often an important matter, in estimating the date of a supposed pregnancy, or in differentiating it from various conditions of disease, to know at what periods some of its signs and symptoms are usually encountered.

I have therefore appended a table showing the date at which the various signs or symptoms become developed. All such statements of accurate or even of average dates must be taken, however, as merely approximate. The table is slightly altered from Tanner.

TABLE OF SIGNS OF PREGNANCY.

	Calendar Months of Pregnancy.								
	1	2	3	4	5	6	7	8	9
Morning sickness,	x	x	x	?	?	.	.	..	...
Suppression of menses,	x	x	x	x	x	x	x	x	x
Mammary areola, . . . . .	...	?	?x	x	x	x	x	x	x
Enlargement of abdomen, . . . . .	...	...	?	x	x	x	x	x	x
Fœtal movements, objective, . . . . .	...	...	...	?	x	x	x	x	x
Shortening of cervix, . . . . .	...	...	...	...	?	?	x	x	x
Ballottement, . . . . .	...	...	?	x	x	x	x	?	?
Uterine souffle, . . . . .	...	...	?	x	x	x	x	x	x
Fœtal heart, . . . . .	...	..	!!	?	x	x	x	x	x

The mark (x) shows the months during which the sign is usually observable. The mark of interrogation shows the more common variations in this respect.

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